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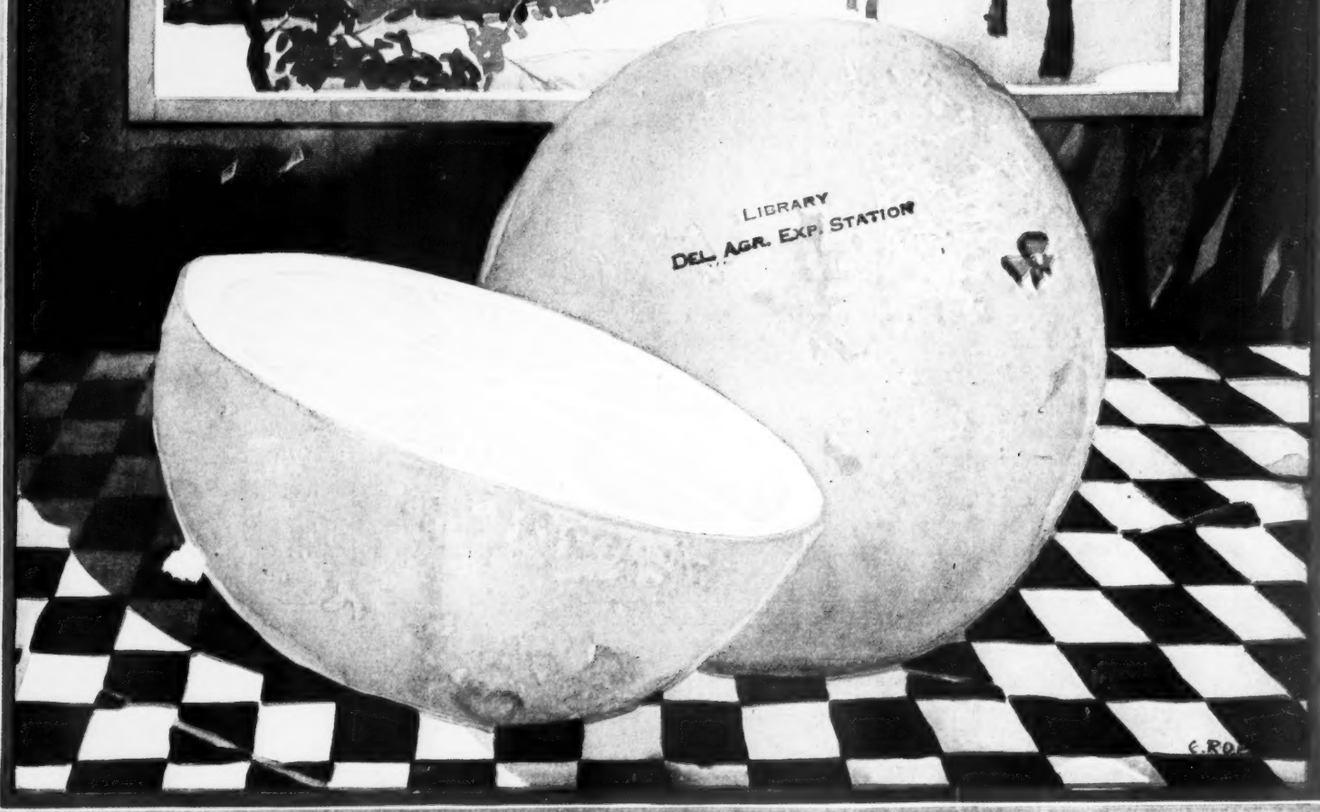

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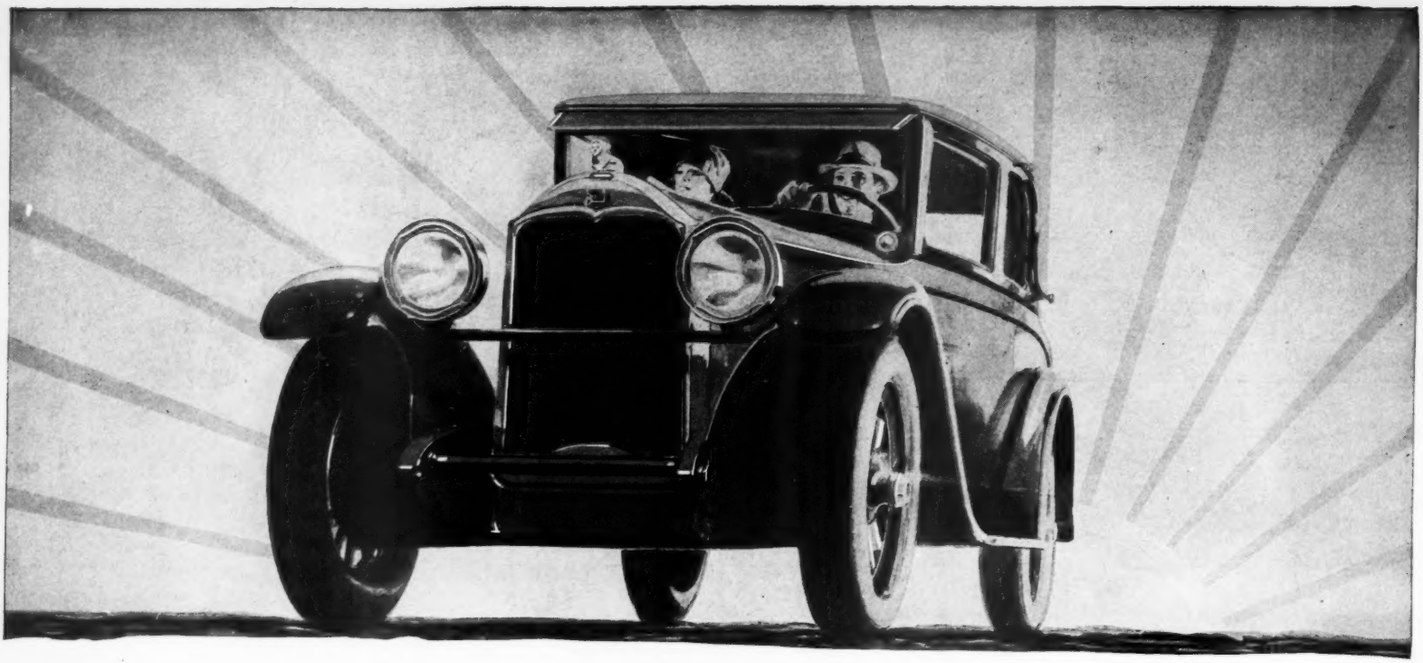

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TWO MILLION BUICKS TWO MILLION BUICKS

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HARRY W. WALKER, General Manager
C. E. DURST, Managing Editor
ADVERTISING REPRESENTATIVES

Publication Offices
53 W. Jackson Blvd.
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Eastern Manager
ROGER FISON
250 Park Ave., New York City

Pacific Coast Manager
LOYD B. CHAPPELL
611 S. Coronado St.
Los Angeles, Calif.

J. C. BILLINGSLEA
1119 Advertising Bldg.
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Pruning Apple and Pear Trees

By T. J. Talbert

University of Missouri

Part II

ON ACCOUNT of the danger of winter injury, the pruning of trees planted in the fall is often delayed until just before growth starts the following spring. Damage from this source is rarely experienced in Missouri; and if it is difficult to find time in the spring to prune fall or winter set trees, this work may be done at planting time.

Proper pruning of the tree top will restore the balance between the root system and the top of the tree, which is disturbed when many roots are destroyed at the time the trees are dug for transplanting. One-year-old trees usually grow in the form of a straight whip or stem. The pruning in such cases will consist in cutting the tree back at planting time to a height of 28 to 36 inches from the ground. Such pruning will force the main or scaffold branches out below the point where the cut was made. The height of the tree head is, therefore, largely determined by the height at which the newly set tree is topped. The main or scaffold branches usually start from buds in a space 10 to 14 inches immediately below the point at which the tree is headed or its top removed.

When two-year-old trees are used for planting, we usually have from two or three to five or six branches on the young tree. It is generally advisable to remove a few and cut back all the remaining side branches to a distance of from six to 10 or 12 inches and shorten the leader to a height of about 36 to 40 inches from the ground. In some cases, it may be best to remove all of the laterals to secure a satisfactory framework of branches, in which case the tree should be cut back to a height of 28 to 36 inches and treated as a one-year-old tree.

The roots of young trees are usually cut back to a length of eight to 10 inches; and diseased roots or badly mangled roots are generally removed. Nothing is gained by leaving long roots.

Pruning Young Apple Trees Until Bearing Age

If the young trees are properly pruned at planting time they will not, as a rule, require severe pruning the first, second or succeeding years. It will be necessary, however, to thin out branches here and there and cut back particularly strong growing limbs in order to develop a well balanced top. For best results judicious training, light thinning and the suppression of strong leaders are necessary to the growth and development of well-balanced branches capable of carrying a heavy load of fruit. At no time is it advisable to do severe pruning unless it becomes necessary to correct a badly formed tree top. Such undesirable tops are sometimes formed by the heavy prevailing winds which blow from the southwest during the growing season. Strong, vigorous trees, are, of course, less affected by the wind than weak, slow-growing trees. When trees lean badly toward the east and northeast as a result of the wind, the heaviest pruning should be done on the side opposite the prevailing winds.

Rather severe pruning may also be necessary to develop a well balanced top when cultivation has broken off the limbs on one side. With this and all like problems, the pruner should remember that heavy pruning usually has a dwarfing effect upon the young trees and delays the time of bearing.

This so-called corrective pruning, during the first few years in the orchard, is done largely by thinning out interfering or competing branches; and since such pruning need not be severe, it does not delay bearing or reduce the size of the trees. That severe or heavy pruning will usually delay the time at which the trees come into bearing is a generally accepted fact. The leaf area is reduced and later, as a result, the root area is also restricted to maintain the balance. It is also true that trees with no pruning or trees that have been pruned lightly are larger at bearing age than trees which have been pruned heavily.

Another factor considered in pruning and training young trees before they come into bearing is in regard to various diseases which may enter the trees through the wounds made by pruning. The danger from this source is not great, however, until the tree becomes older. Heavy pruning also encourages the growth of water sprouts, and these necessitate more pruning each year and thus increase materially the cost of bringing an orchard into bearing.

It must not be assumed from this that no pruning is needed. Pruning to correct the shape or form of the tree in order to develop strong branches which will carry a heavy load of fruit is required. Beyond this, however, severe pruning should be practiced only for the reasons mentioned above. A light pruning each year will keep the branches properly spaced and in balance. Pruning should be reduced to the minimum as the trees come into bearing. It is well known that the most productive orchards are usually the ones receiving the least amount of pruning.

Pruning Neglected Apple Trees

Many growers take possession of an orchard in which pruning has been badly neglected, or appreciate too late the value of pruning in their orchards, and in an effort to make the tree appear properly pruned remove entirely too many branches the first year. This severe pruning after years of neglect may throw out of balance the top and root system and produce a heavy growth of water sprouts which may result in little or no fruit development. It is a much wiser procedure to prune only moderately the first year, removing and thinning out the small branches in the top of the tree and also here and there in the center and on the sides, in order to open up the tree for the admittance of sunlight and air. It is seldom advisable or necessary in the neglected orchard to remove limbs larger than one and one-half inches in diameter. It is true that occasionally limbs larger than this will be found growing in undesirable places, but, though it would be much better for the tree were they not there, their removal would produce large wounds which might be very slow in healing.

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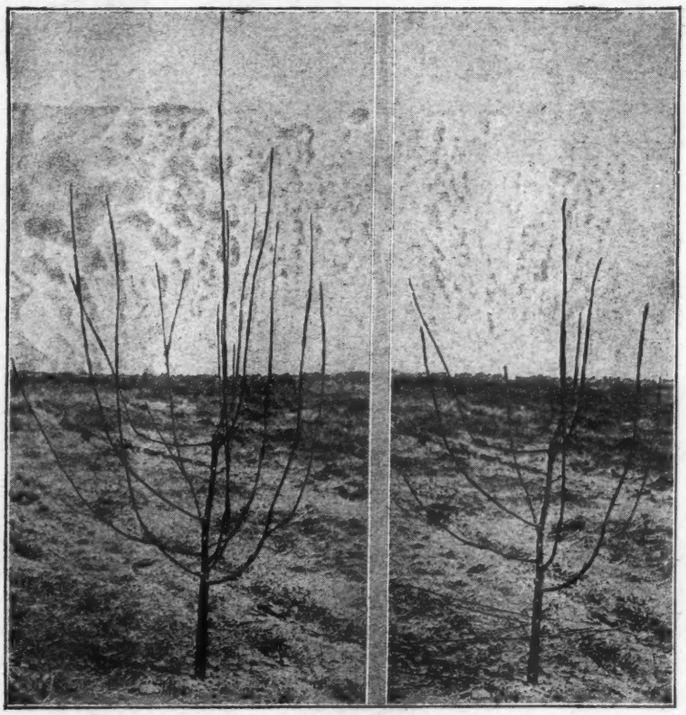

An apple tree after one year's growth in the orchard, before and after pruning

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Pruning Peach Trees in California

By Warren P. Tufts
University of California

THE 1927 season was a rather disastrous one, at least so far as the California canning peach grower was concerned. The price received by the orchardist for his product in most instances did not pay the cost of production. In spite of the fact that California has had a tremendous increase in its tonnage of canning peaches during the past few years, there are many trees from one to four years of age which during the next four or five years will materially increase this tonnage. One of the problems which the peach grower, whether his trees are in bearing or not, must face is how to handle his orchard so that he can expect a return which will repay operating costs and leave something in addition in the way of profit. The writer does not expect that anything he may say in this article will go very far in the way of solving the problem, nevertheless it may be in a small way of some assistance. He, therefore, has kept the present canning peach situation particularly in mind in writing the following paragraphs, although they apply with almost equal force to shipping and drying varieties.

In the final analysis, the law of supply and demand will operate to settle the price which will be paid for any product. Therefore, that grower who produces the most peaches of number one grade, at the lowest cost per acre, will be the one who will most successfully weather the crisis through which the canning peach industry is today passing. Naturally those orchards located on "marginal" land, where maximum and even average production cannot be secured, are the ones which are the hardest hit by low prices, and in spite of most careful cultural treatments they can be profitable only when prices are relatively high. A few suggestions looking towards more economical production follow.

Thrifty Growth and Large Bearing Surfaces Essential

With young non-bearing trees the effort should be to secure a thrifty growth so that a large bearing area will be secured in the shortest possible time. The results of careful experiment[1] clearly indicate that deciduous fruit trees of all kinds produce large tops and root systems and come into bearing at an early age when pruned as lightly as is consistent with securing main framework branches so spaced that heavy crops in future years will not find the tree mechanically weak. By light pruning and other good cultural methods, four-year-old peach trees on soil adapted to them have produced from 10 to 20 tons of number one canning peaches per acre.

If by light pruning during the formative age of the tree its size can be increased and its profitable bearing hastened, this would seem desirable from the viewpoint of the individual, if not of the entire industry. By lessening the time necessary to bring trees into bearing, the orchardist cuts down the overhead which all future crops must bear.

Important Steps in Handling Young Trees

Briefly, the writer would suggest the following steps in the handling of a peach orchard to bearing age:

1. Plant a well grown and properly matured one-year-old tree with a top growth of four to five feet and a caliper above the bud union of one-half to five-eighths of an inch in size.

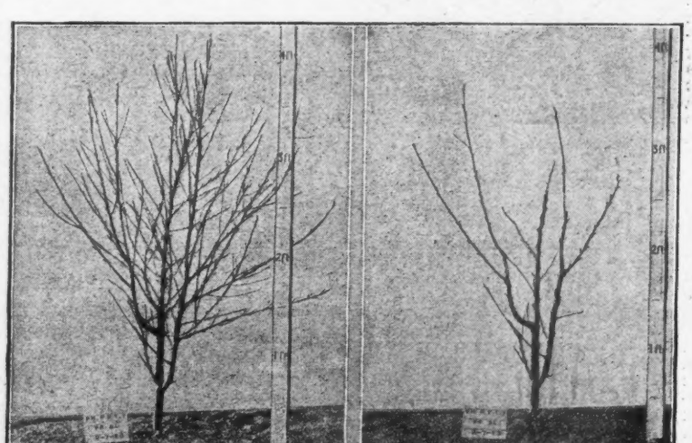
2. Head such tree at planting time at about 24 inches from the ground and remove all side branches below this point, leaving one-half-inch stubs in each case. If these side branches are cut off close to the trunk no new shoots from adventitious buds will arise at these points, and since nearly all peach trees break into secondary growth in the nursery row, new branches, if the old ones are cut off, must arise from adventitious buds. If the nursery side branches are of good size and well distributed up and down and well balanced around the trunk and at a rather sharp angle with it, they may be left and headed back to a length of 10 to 20 inches. As a rule less than one nursery tree in 10 has suitable side branches and all must be removed; if one or two are left, practically all new growth will arise from these, generally giving an undesirable shape.

3. At the end of the first growing season, select three well placed branches, as indicated above, and head these back to a length of 20 to 40 inches, saving good strong side laterals wherever possible.

4. At the end of the second growing season, thin out so that from five to seven main branches at some five feet from the ground are left. These require no heading, but undesirably placed laterals should be removed.

5. At the end of the third and fourth seasons, lightly thin out crossing and interfering laterals and reduce the fruiting wood to what the trees can support. In the thinning of this fruiting wood, it should be remembered that young trees as a rule do not set as high a percentage of their blossoms as do older trees.

In the shaping of young trees, the writer is of the opinion that the most important fact to keep in mind is that, if it is desired to check the growth of any branch, portion of a tree or whole tree, prune such part or whole severely; on the other hand, to encourage the growth of any part, cut such part lightly.



At the left is shown a typical Phillips cling peach tree after one season in the orchard. Note vigorous, thrifty growth, a result of good soil and treatment. At the right the same tree is shown after pruning. Note rather severe "thinning out" this tree has received. Six branches which will form the ultimate framework have been selected and left unheaded

Care of Bearing Trees

Trees pruned as above outlined should come into profitable production during the fourth year and after that time may be considered as bearing trees. So far as form is considered, probably the most important economic consideration in the bearing tree is the total height which the tree should be allowed to reach. If trees are closely planted, it is far more difficult to keep them low than if more widely spaced. On good peach soils in California, the writer is of the opinion that peach trees should be planted not closer than 22 feet and preferably 24 feet apart. All pruning, thinning and harvesting should be accomplished from a ladder not more than 12 feet and preferably 10 feet high. Every extra step up on the ladder in the orchard operations adds materially to the operating costs. The trees may be kept from becoming too high by regularly cutting back the tallest branches to strong outward growing laterals.

Amount of Growth Is Best Criterion

The total amount of new growth which the tree makes, taking into consideration the crop produced and the conditions under which it is grown, is the best criterion by which to judge whether the pruning has been of the proper severity.

There is probably no other fruit which responds to proper pruning and

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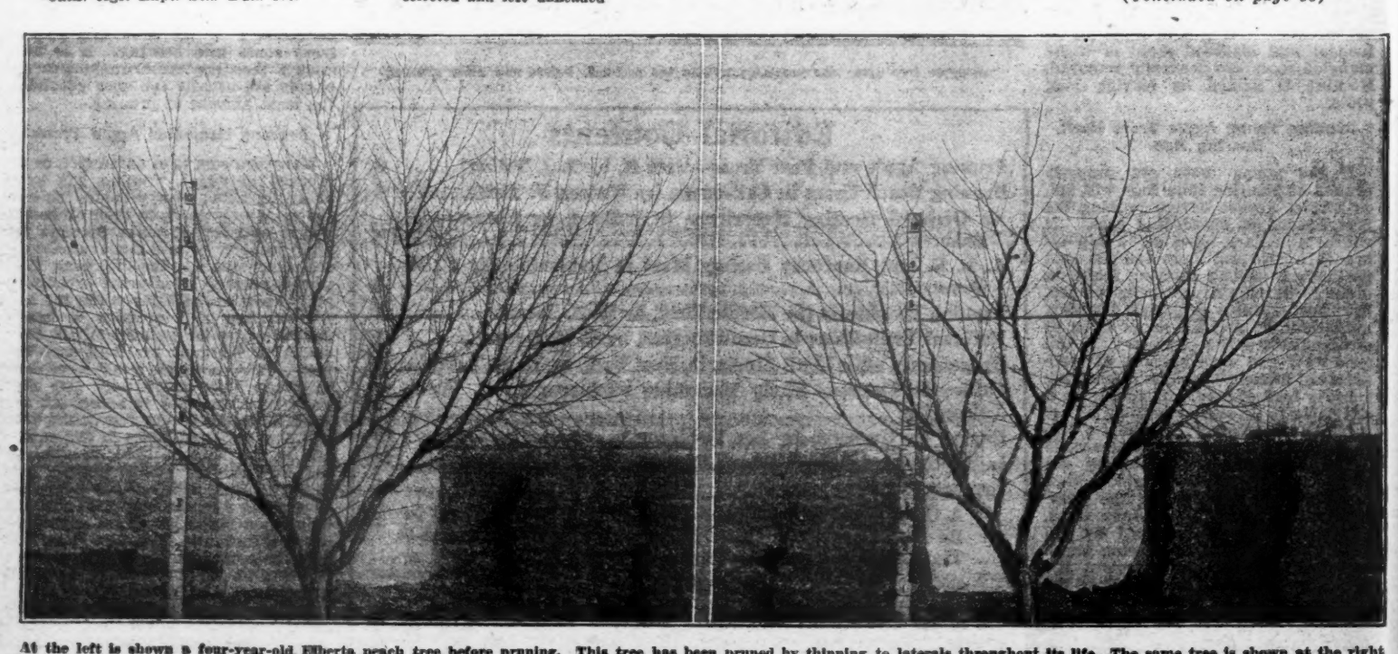
[1]Calif. Agr. Expt. Sta. Bull. 313.



At the left is shown a four-year-old Elberta peach tree before pruning. This tree has been pruned by thinning to laterals throughout its life. The same tree is shown at the right after pruning. Fruiting wood has been thinned out and the height of tree lowered by cutting back to outward growing laterals. This tree during the next season produced approximately 800 pounds of highest quality fruit

An Orchard Heating Experience in Indiana

By Clarence E. Baker

Purdue University Agricultural Experiment Station

THAT the heating of orchards to prevent damage from spring freezes still has a place in commercial practice was demonstrated by the Laurel Orchard Company of Franklin county, southeastern Indiana, during the past season.

This large orchard of more than 200 acres, situated in the rolling country abounding in the southern part of the state, has been a ready prey to the ravages of spring freezes. A large portion of the orchard is located on hillsides or valleys, making the chances of injury from sudden drops in temperature exceedingly great. Experiences of the past 10 years have indicated that the success of the entire project might lie in the ability of the managers to cope with this serious drawback and establish some means of protecting the crop against frost injury.

Daybreak in an orchard using an oil burning heater

Coke Burning Heater Selected

A few years ago, orchard heaters of different types were tried out in an experimental way, with the result that a coke burning heater was selected as being one of the most efficient under their conditions. This heater is an upright sheet metal cylinder about 36 inches high and 15 inches in diameter. The bottom is composed of a cast iron grating with an oil pan to the front holding about one-quarter pint of oil to start the fire. Just above this oil cup there is a hole in the body of the heater through which the oil is poured in. Legs, also of cast iron, hold the heater about four inches above the ground, and a cover is provided to keep the contents of the heater dry.

Above the grate, a layer of kindling is placed and the remainder of the heater is filled in with coke. Each pot holds approximately 30 pounds of coke and burns at its maximum capacity for about three hours. If it is necessary to run the heater longer, more coke may be added after this time if the heater is shaken down. As the coke is not entirely consumed, there is some salvage, but the heater operates best when kept well filled with coke.

E. B. Schultze of the Laurel company, who has supervised this work, estimates that one man can tend to the firing of about 200 heaters, and one man is required to each 150 heaters to clean out, refill and have them ready for the second night.

Emergency on April 23, 1927

The emergency for which the company had been preparing for several years arrived on the night of April 23, 1927, in the form of a rapid and severe drop in temperature that extended over a large portion of the western and mid-western section of the country. As advanced warning of the cold had been received, the forces were ready for action. In the coldest part of the orchard, 70 heaters per acre were used, and in the next coldest part 52, and on the higher parts 35 per acre. The trees are 35 feet apart each way, giving 35 trees per acre. The entire orchard was not protected, as a sufficient number of heaters was not on hand, the project being still in the experimental stage.

By 9:30 P. M. the temperature had dropped to 30 degrees, and at this time the firing of the pots was begun. When 70 and 52 heaters were used, the ones in the north and south rows were lighted first, making 35 per acre.

Within half an hour the temperature in the heated area had risen to 33 degrees, but after this time it began to fall again and by 1:00 A. M. the temperature in the heated area had fallen to 30 degrees and that outside to 27 degrees. At this time the remaining half of the heaters were lighted and the temperature was again quickly raised to 32 degrees and held there for two hours. It then slowly fell to 30½ degrees about sunrise in the area having the most heaters. At this time the temperature outside the heated area was 21 degrees.

In the section of the orchard where 52 heaters were used, the temperature fell to 29 degrees, and the temperature in the unheated portion of the same section fell to 23 degrees.

Where 35 heaters per acre were used, the temperature did not drop to 30 degrees until 1:00 A. M. At this time the pots were lighted and after rising for half an hour the temperature fell gradually until sunrise, reading 28½ degrees in the heated area and 24 degrees in the unheated. This section of the orchard was on the highest ground.

Repeated on Following Night

The following night the process was repeated, but on this night the tem-

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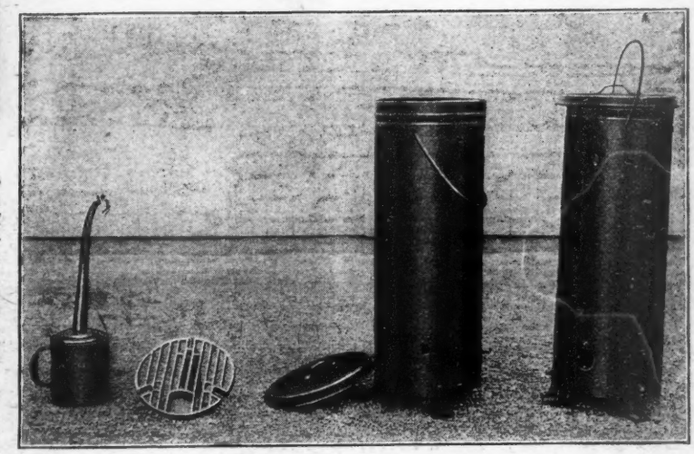

The coke burning orchard heater used by the Laurel Orchard Company. This heater holds 30 pounds of coke and burns at its maximum capacity for three hours or longer

A. P. S. and Kentucky Society Meet at Louisville

By C. E. Durst

THE JOINT MEETING of the American Pomological Society and the Kentucky State Horticultural Society, held at Louisville, Ky., December 6-8, was a successful affair from all standpoints. A spirit of harmony and co-operation prevailed throughout. The program was excellent. Accommodations for the growers personally and for the meetings and exhibits were all that could be desired. The attendance was exceptionally good and included growers from numerous states.

Program Covers Many Subjects

The program included addresses by recognized authorities and subjects of outstanding importance were discussed. The first speaker was W. W. Magill, extension horticulturist in Kentucky. He discussed the factors to be considered in starting a peach orchard. W. S. Perrine, successful peach grower of Centralia, Ill., discussed pruning of the peach. He recommended the long system, which he has been practicing for a number of years, and he explained in detail how to prune trees according to this method. R. A. Simpson of Vincennes, Ind., talked about cultivation and fertilizing of the peach.

Roy Marshall of the Michigan Agricultural College discussed the Michigan investigations in which it was found that many orchards were losing propositions because of poor locations and poor varieties, and he gave suggestions as to how such things can be avoided by others. Frank Cullinan of Purdue University talked on pruning the apple. C. A. Bingham of Ohio sent a paper on ringing apples. Dr. E. J. Kraus of Chicago University, who was largely responsible for developing our present knowledge of growth and fruit production, gave a valuable and interesting address on "How to Get Heavier Production."

Alderman Discusses Fruit Sections

W. H. Alderman of Minnesota, who returned recently from a nation-wide tour of the fruit sections, gave an interesting account of his observations. M. J. Dorsey of Illinois told the growers of a strain of Hale peaches which is self-fertile to a much larger extent than the original strain. This may account for the conflicting reports regarding the fertility of this variety, he stated. The fruit is not so spherical as the Hale; it carries a purplish cast; and it is not so good in quality.

W. G. Campbell, director of regulatory work of the United States Department of Agriculture, talked on the arsenical residue situation.

George M. Darrow of the Bureau of Plant Industry could not be present, but he sent an excellent paper on the commercial strawberry situation. W. T. Macoun of Ottawa, Canada, sent a paper on progress in apple breeding. B. A. Porter of the United States Department of Agriculture, located at Vincennes, Ind., gave an interesting summary of the codling moth situation. He stated that washing with muriatic acid solution had proved a practicable method for removing the residue but that it increased the expense and had to be done with care. E. B. Schultze of Laurel, Ind., described his experiences in saving a crop of apples by orchard heating last spring. F. C. Gaylord, marketing specialist of Purdue University, advised adequate preparation for success in marketing peaches.

Majority Favor Economic Activities

A banquet was held on the evening of Wednesday, December 7. In the absence of Prof. J. C. Blair, Dr. U. P. Hedrick acted as toastmaster. A number of speakers representing numerous branches of horticulture discussed "Plans and Future Activities of the American Pomological Society." The preponderance of opinion was in favor of directing the activities of the society along economic lines.

Ohio Fruit Judging Team Wins First

For some years the American Pomological Society has offered prizes to student fruit judging teams. This year the first prize, consisting of a silver loving cup, was won by Ohio, whose team scored 96 per cent. The other states in order were as follows: West Virginia, 95 per cent; Missouri, 94 per cent; Massachusetts, 93 per cent; Kansas, 91 per cent. L. B. York of Ohio made a mark of 100 per cent and was awarded the gold medal of the society. J. C. Snyder, also of Ohio, won the silver medal with a mark of 99 per cent. C. C. Rice of Massachusetts scored 98 per cent and won a bronze prize for third place.

Important Resolutions Passed

A number of important resolutions were adopted. Thanks were extended to the Kentucky State Horticultural Society, the Kentucky College of Ag-

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A Good Resolution Always

THE MAKING of resolutions at New Year's time has become a mere jest to many people. It is never a bad thing, however, to make resolutions. The human mind and soul are queer things—things we do not understand very well—and it is only by constant driving toward the desired goal that we are able to point our lives in the right direction. Religious and psychological authorities alike tell us that continued efforts of this kind are helpful.

There is one resolution that all of us can make to advantage at New Year's time as well as at all other times of the year. And that is to adopt a policy of clean living, clear thinking, hard work, and honest and fair dealing with our fellow men.

In these days, when one sees so many people following other policies, it is hard to hold ourselves to the one described. Lying, misrepresentation, double-crossing, sharp practice, betrayal and stealing have apparently become the accepted practice of a good many of our citizens, and unfortunately for its effect on mankind, many persons who employ such practices seem to get along pretty well. Some of them even seem to be able to enjoy their ill begotten wealth permanently.

But consider the situation more analytically. Single out a few persons whom you have known to employ such practices. Follow them for a few years and see where they have gotten to. Many of them have quickly dropped by the wayside in the march toward success. Some have been more shrewd and have gone a good ways in many respects. Their progress has in many cases been made by great jumps, but in numerous instances they have sooner or later dropped behind again by greater jumps than the jumps they made forward. Some, it is true, have retained their advantages permanently, but remember that even in such cases material progress is only one factor. Such people, by their very manner and bearing, indicate to the world that their consciences are not clear. Furthermore, they do not enjoy the confidence and good will of their fellow men. These factors cannot be measured in terms of money, and such persons know this better than anyone else. As one nears the end of his days, mere money becomes a mighty cheap thing.

Compare with such persons some of the people you have known to follow the first policy described. Their progress may have been slow and unspectacular on the average, but in most cases it has been steadily forward. Reverses with such people, except from accident or sickness, are rather uncommon. They may suffer setbacks occasionally in their dealings with sharpers and double crossers, but like the bible of medieval times, they will come back in spite of all obstacles, and every time they come back they are sterner realities than ever before. Watch such people over a period of years in the keen competition of men, and you will see them working their way steadily toward the better things of life, and by this we mean peace of mind, good will of their fellow men, and all the material advantages the world can offer. Watch the other kind of people for the same period, and you will see most of them drop by the wayside in some respect or another.

And so, while a policy of clean living, clear thinking, hard work, and honest and fair dealing may not offer the rapid and spectacular progress that other kinds of policies may seem to offer, yet it is the best and surest policy to follow from every standpoint in the long run. Such a policy is a good one to determine to follow at New Year's time, as well as at all other times of the year.

The King of Fruits About to Be Dethroned

THE APPLE has long been called the King of Fruits, but it seems destined to lose that exalted position, if it has not already done so.

In 1926, 58,550,364 bunches of bananas were imported, duty free, into the country. In terms of carlots, as bananas are loaded, this would amount to about 105,496 cars.

In the case of apples, our carlot shipments during the last 10 years have varied from 58,406 cars in 1917 to 138,184 cars in 1923. The average annual carlot shipments have been 103,822 cars. Thus, our average annual carlot shipments of apples for the last 10 years were actually below the shipments of bananas in 1926. And we believe the 10-year average is a pretty fair criterion of our capacity for apple production in view of the slowness with which this fruit comes into bearing and the variation in production that occurs from year to year.

It must be borne in mind, furthermore, that in the case of apples, the average of 103,822 cars included the cars rolled to ports for exportation, while in the case of bananas, the 105,496 cars imported in 1926 were all consumed in this country.

Such figures should convince the most skeptical that bananas are offering serious competition to our native grown fruits. We are growing apples in larger quantities than any other fruit in this country, and yet the banana importations in 1926 slightly exceeded our average annual carlot shipments of apples for the last 10 years!

Another thing to consider in this connection is the relative prospects of growth of the two industries. Statistics show that apple production in the United States is fairly well stabilized and shows no tendency to increase rapidly in the near future. On the other hand, the United Fruit Company alone controls 1,431,421 acres of unimproved land in the tropics, in addition to its 452,481 acres of improved land. Apparently, it has plans for extensive expansion of its operations. Reports indicate that other banana interests are planning to extend their holdings. The banana business of the United Fruit Company increased about eight per cent from 1925 to 1926, and there is every reason to expect a continued steady increase.

The apple, our King of Fruits, seems about ready to be dethroned, and the banana, a tropically grown fruit which enters the country free of all duty and which is offering serious competition to American grown fruits, appears about ready to take its place.

The Home Fruit and Vegetable Garden

WHILE fruit growers are not as guilty on this score as general farmers, it is a fact that some of them make a purely commercial proposition of their business. They devote their energies entirely toward growing the crops they make their money from, and they ignore many things which make farm life more worth while.

We have in mind particularly the home garden and fruit plantation. Every farm should have a good garden. A garden properly managed will supply an enormous quantity of the most healthful food throughout the season. It will relieve the wife of worries as to what to cook. It will keep the children healthier and will reduce doctor bills. Incidentally, it will save a considerable sum of money throughout the season in the food bill.

So far as a home fruit plantation is concerned, it is quite common for commercial growers to plant a few varieties best fitted for market. Particularly is this true when the fruit is shipped to a distant market. Quite often such varieties are not the best ones for home use, and rarely do they furnish a good succession throughout the season.

The way to correct this situation is to set out some fruit especially for home use. All the kinds should be planted which will grow in the locality, and varieties should be selected which are of high quality and which will furnish a liberal supply throughout the season as well as for canning, drying and storing.

A lot of satisfaction can be derived from a good home garden and fruit plantation. If you have not given special thought to this matter before, may we not suggest that you work out a plan during the winter and put it into operation next spring?

The Tax Problem of the Farmer

"THE POSITION of American agriculture is of vital concern to all the people of the United States, not only for today but for the future as well."

"The development of sound, far-sighted national policies in respect to agriculture is, therefore, one of the most important problems before the country today."

"The tax burden of agriculture, unlike that of other classes, is fixed with little relation to the agricultural income."

"The principal source of state and local revenue is the general property tax which rests almost exclusively on real estate. Intangible personal property, such as stocks, bonds, bank deposits, notes, etc., now exceeds in all probability the value of real estate, yet it is increasingly difficult to reach this increased wealth by taxation."

"The farmer has suffered particularly from this development, the amount of taxes levied upon farmers having grown from $308,000,000 in 1913 to $845,000,000 in 1923."

"There can be little doubt that the burden of taxation, as related to taxpaying capacity and with recognition of the comparative quid pro quo obtained is heavier on agriculture than upon the rest of the nation's taxpayers combined."

The above quotations are extracts from "The Agricultural Problem in the United States," by the National Industrial Conference Board.

Pruning Peaches in the Middle West

By W. S. Perrine

PRUNING is only one of the essentials in successful peach growing, but it is one of the most important. After a good many years of experience with the long system of pruning, I am as strongly in favor of it as I was at the start.

By the long system, I do not mean that there should be no cutting or tipping back of the main branches.

I find that the long system is just about as applicable to the older trees as to the young ones, though not to the same degree. This is especially true if the trees have been planted far enough apart.

Pruning Young Trees

The only object in pruning young trees is to secure an open, well-formed and well-balanced framework. This result should be secured with as little pruning as possible. Pruning does not make the trees grow more, it makes them grow less, that is, it is a dwarfing process.

Even very light annual cutting or tipping back of the main branches of young trees will do wonders toward spreading the tree and checking the strong upward tendency so characteristic of the peach. This light tipping stimulates the small side twigs and limbs into slightly greater growth and so contributes to the total growth of the tree and to its spread.

Severe cutting back of half or more of the last summer's growth on the main branches results in a few strong, succulent, upright growths of from four to seven feet in length near the cuts. These growths have few and small side twigs. If they are cut back to half their length the next season, the situation becomes even worse. The strong growths are made at the expense of the small twigs and the limbs below the severe cuts, so that they do not grow much, or by the end of the season these lower limbs may even die. Thus, the spread of the tree and the number of growing points are greatly reduced. The tree is dwarfed as a consequence, and is besides a bad proposition to prune.

The light tipping back should always be accompanied by moderate thinning out. The stronger the growth of the trees, the more thinning out is required. Undesired limbs that are competing with the scaffold or secondary limbs must be cut out or subdued.

The thinning out should be as light as possible consistent with a rather open tree. It is best accomplished by making a few larger cuts rather than a lot of smaller ones. Cutting last summer's small twigs is a waste of time on young trees especially, even though the twigs seem twice too thick. It is an unnecessary expense and does no good. It may do a good deal of harm, especially if done after the growth starts in the spring.

Pruning Older Trees

In pruning older trees, the picture changes somewhat from that described for young trees.

As we have seen, we prune the young tree so as to bring about its rapid growth as a whole and at the same time slow down the individual twig growth to the fruiting type.

In the case of the older trees, it is usually necessary to prune to speed up the individual twig growth and to try to maintain year after year the proper balance between wood growth and fruit production.

As the trees get older, the amount of pruning is gradually increased mainly by thinning out. If the number of scaffold and secondary limbs has been properly restricted during the younger period, you will need now only to cut out the smaller limbs as they get too big.

The thinning out will be done mainly in the top of the tree, and will consist of removing some of the strongest limbs or twigs going straight up and also those growing toward the center that are likely to produce too much shade there. Prune for the maximum amount of light with the minimum amount of pruning.

The cutting or tipping back should be increased but still it should be moderate. Prune for horizontal limbs or for those with considerable angle. Then restrict the upright growth on these somewhat by either cutting off or tipping.

Do not cut back the angle and horizontal limbs until it is absolutely necessary because they are getting in the way or are shading the center too much. In other words, use the long system as much as possible even on old trees.

Prune for Light

Pruning old trees has a marked effect on the amount of growth because it reduces the number of growing points. If you depend upon pruning alone to produce the desired growth, it will have to be quite severe and your tree will get smaller and smaller.

The object should not be primarily to secure growth but to secure openness and light. Secure the desired growth mainly by fertility, supplemented by cultivation. Moderate pruning and rather heavy fertilizing will not only maintain or increase the bearing area of the trees but will increase the fruit production.

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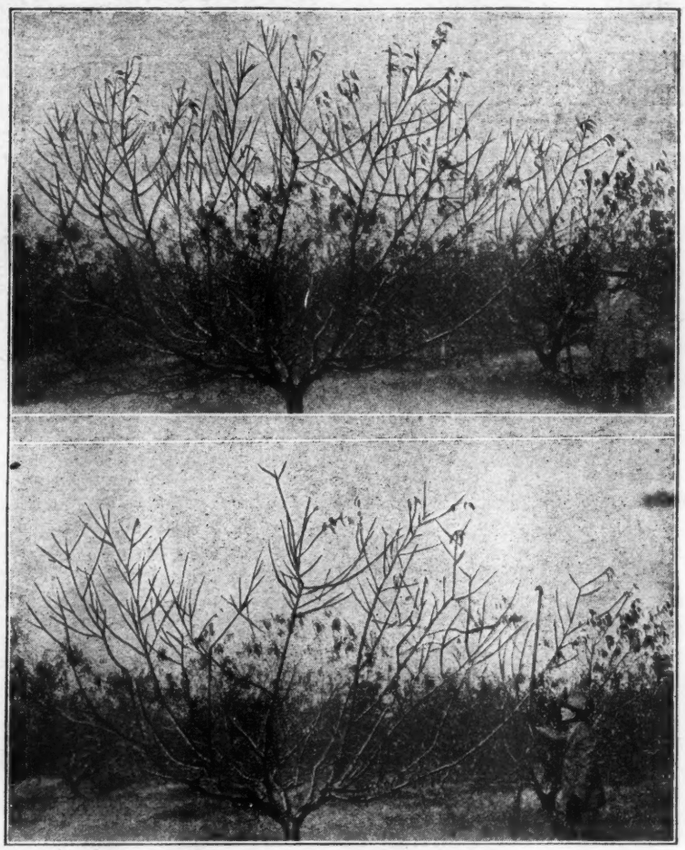

Five-year-old (sixth summer) Hale peach tree before and after pruning. The branches were thinned out rather severely and were headed back moderately. The tree has slightly too many main branches

National Fruit Show Is Great Success

By C. E. Durst

PROBABLY the best fruit show that will be held this year east of the Rocky Mountains was staged by the Central States Horticultural Exposition at Kansas City, Mo., on November 28-30. Certainly no fruit show in the eastern United States this year can excel this one, and it is doubtful if even the Pacific Northwest will anywhere put on a better show. The quality and variety of the products, the territory represented, and the appearance and make-up of the exhibits were outstanding features. The term "National Fruit Show" that was used to designate this affair was assuredly not out of place.

The show is a regular biennial affair of the Central States Horticultural Exposition, which in turn is sponsored by a number of Middle West states extending from the Mississippi River to as far west as Colorado and New Mexico.

The exhibit was staged in the large Kansas City convention hall. The fruit occupied a central position in the building and extended for fully two-thirds the length of the hall. Here a large curtain crosses the hall, back of which the meetings were held. The five state exhibits were located immediately in front of the curtain. With the beautiful Kansas exhibit occupying a central position, and with other state exhibits arranged beside it, a most pleasing background was formed for the entire display. On both sides of the fruit display and flanked by commodious aisles, were numerous educational and commercial exhibits.

Elect New Officers

A horticultural program was held in connection with the show. Authorities from various states discussed questions of importance to the industry. A resolution was passed approving a tariff on bananas, and a committee was appointed to co-operate with other committees in achieving this end. Officers were elected as follows: president, E. P. Sandsten, Fort Collins, Colo.; vice-president, John R. Cooper, Fayetteville, Ark.; and secretary-treasurer, George W. Catts, Kansas City, Mo. The following directors were elected: G. W. Cochran, Stillwater, Okla.; Dr. A. P. Crile, Roswell, N. M.; George W. Dyer, Cedaredge, Colo.; A. P. Boles, St. Louis, Mo.; C. O. Garrett, Des Moines, Ia.; Grove M. Porter, Nebraska City, Nebr.; S. S. Connett, Faucett, Mo.; D. C. Webster, LaCrescent, Minn.; and George T. Groh, Jr., Wathena, Kans.

In the sweepstakes exhibit for apples, first prizes were won by the following parties: best barrel—Joy Morton Orchard Company, Nebraska City, Nebr.; best five boxes, any variety—C. J. Lawler, Hotchkiss, Colo.; best box, any variety—Wilfred Dyer, Cedaredge, Colo.; best five bushel baskets, any variety—J. R. Wilson, DeKalb, Mo.; best one bushel basket, any variety—Connett Estate, Faucett, Mo.; best five trays, any variety—Joy Morton Orchard Co., Nebraska City, Nebr.; best one tray and best five plates, any variety—George A. Hawkins, Cedaredge, Colo.; and best plate, any variety—Wilfred Dyer, Cedaredge, Colo.

First prizes in the commercial barreled apple class were won by the following: Arkansas—J. L. Stivers, Nebraska City, Nebr.; Ben Davis—J. R. Wilson, DeKalb, Mo.; Grimes, Jonathan and York—Connett Estate, Faucett, Mo.; Willow Twig—Apple Grove Orchards Company, Mitchellville, Ia.; Winesap—Joy Morton Orchard Company, Nebraska City, Nebr.; and any other variety—Loy L. Franklin, Falls City, Nebr.

Keen Competition in Box Classes

First prizes for the best five boxes of apples were won by the following: Arkansas—C. J. Lawler, Hotchkiss, Colo.; Delicious—E. J. Ginter, Cedaredge, Colo.; Grimes and any other variety—Apple Grove Orchard Co., Mitchellville, Ia.

In the single box class the winners of first prizes were as follows: Delicious — Wilfred Dyer, Cedaredge, Colo.; Grimes and any other variety—George A. Hawkins, Cedaredge, Colo.; Jonathan—E. O. Worth, Mondamin, Ia.; Stayman—E. J. Ginter, Cedaredge, Colo.; and Winesap—Bryon Elder, Austin, Colo.

Winners of first prizes in the five bushel basket class for apples were as follows: Delicious—J. R. Wilson, DeKalb, Mo.; Jonathan—E. O. Worth, Mondamin, Ia.; and any other variety—Loy L. Franklin, Falls City, Nebr.

Many Entries of Bushel Baskets

In the single standard bushel basket class for apples, competition was very keen. The winners of first prizes were as follows: Delicious—Loess Land and Orchard Company, Schubert, Nebr.; Grimes and Jonathan—Connett Estate, Faucett, Mo.; Stayman—Pile and Walker, Forbes, Mo.; and any other variety—L. W. Adams, Tinnie, N. M.

Those who won first prizes in the five tray class for apples were as follows: Arkansas—J. L. Stiver, Auburn, Nebr.; Ben Davis or Gano and Grimes

(*Concluded on page 23*)

Experiences With Fruit Stocks in New York

By H. B. Tukey

New York State Agricultural Experiment Station

FOR THE average fruit grower, the fruit stocks used at the present time are fairly satisfactory. Yet it is a good guess that in many cases unsuitable stocks have been responsible for failing trees whose failure has been ascribed to other sources. For example, plum trees will live and bear when worked on peach roots. In fact, the Japanese kinds and some Domestica varieties are more successful on peach roots in certain sections than on the more common Myrobalan roots. Yet in a central New York plum orchard the trees on peach roots have failed, due partly to winter injury and partly to borers, while the trees nearby on Myrobalan roots are doing splendidly. Of course, the severe weather conditions and the borers were blamed but back of these agents is the stock upon which the trees were worked.

Kieffer Pear Furnishes Good Example

Another instance of similar nature surrounds the Kieffer pear. Most pears are propagated upon French pear seedlings, which really means that they are propagated upon seedlings of the same species as that to which the European pears, such as the Bartlett, belong. The Kieffer, however, is a cross between the Chinese Sand pear and the European pear and is sometimes propagated from cuttings and more often budded upon French roots. It is more resistant to blight than the European varieties; it is adapted to warmer sections; and it does well on lighter soils.

In the Hudson River Valley there is a famous orchard of this variety on sandy soil—famous for the reason that its trees are uniform, productive and healthy, while adjoining orchards are straggling, unproductive and dying. Blight, pear psylla, winter injury and a dozen other factors have been named as the agents responsible for failure, but when all these are run to earth they revolve about the question of stock. The successful orchard is growing upon its own roots, the trees having been grown from cuttings. The unsuccessful orchards are on French pear roots.

So far as present information goes, French pear makes the best general purpose stock, yet in the case of the light soil in question, own-rooted Kieffer trees have proved superior.

Best Growing Nursery Tree Is Not Always Best

Nurserymen and fruit growers have not always agreed as to which stock is best for a given kind of fruit for the reason that the nurseryman is primarily interested in producing first-class trees for sale, whereas the fruit grower is interested in the kind and amount of fruit those trees produce in his orchard. In the long run, the nurseryman's interests and the fruit grower's interests are the same, because the nurseryman, like any other business man, must satisfy the demands of his customers. But it may take many years to prove in a practical way whether the stock that is easiest to grow in the nursery and which makes the best nursery tree also makes the best orchard plant. So far as the plum is concerned, the stock most used by nurserymen has proved in New York state to be the best for the plum grower, while the reverse has proved true in the case of the sweet cherry.

By far the most plums are budded on imported Myrobalan seedlings, belonging to the species *Prunus cerasifera* which grows vigorously to produce a tree of large size. On lighter soils, the peach is used as a stock. For the colder regions, some of the native plums are used, while in the Southwest the Marianna plum, which is there easily propagated from cuttings, is preferred. To further complicate the situation there are many species of plums grown. Besides the common European or Domestica varieties familiar as

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Black Tartarian sweet cherry on Mazzard root at the left and on Mahaleb root at the right

California Growers Study Marketing Problems

By C. Verne Scoggins

IN VIEW of the general situation in the western fruit industry, and with increased production staring many of the branches in the face, it was not surprising that the annual California farmers' and fruit growers' convention held at Stockton in late November turned its attention to the marketing end of agriculture. Outstanding among the expressions at the convention were the urgent appeals for concerted action among growers voiced by such men as Governor C. C. Young of California, Lloyd S. Tenny, chief of the Bureau of Agricultural Economics, United States Department of Agriculture; G. H. Hecke, director of the California Department of Agriculture; Wells A. Sherman, chief of the state division of markets; Seymour Jones, state market agent of Oregon and others. It was emphasized by these men and others that both in California and in the nation the legal stage has been set for grower unification and action along commodity lines as never before possible and that the next move is up to the grower.

Many points in connection with marketing were emphasized by the long array of speakers during the two-day convention. Only the high spots among the thoughts advanced can be touched in this article.

Grower Attitude an Important Factor

California this past year has had an illuminating example of the influence of grower attitude upon the success of a marketing season. The trade and prices have directly reflected the pessimism of western prune growers this past season. California prune growers tried to merge the producers and the packers in an organization and failed. Oregon growers failed in a similar attempt. Prices slumped to discouraging levels even in the face of a comparatively small world crop of prunes.

Then, as a contrast, take the reports made by leaders of the California Vineyardists' Association. This new service body for grape growers instilled a spirit in the industry that resulted in a record tonnage being moved to market at fair prices and much of the pessimism present in the industry during the last three or four years disappearing. The vineyardists' association, organized under the Capper-Volstead act, was able to organize and operate a grape clearing house and bring into united effort practically all of the distributors of California fresh grapes. Speakers emphasized repeatedly that upon the growers' own conduct toward their own products depends the attitude of the trade and the success with which these products will be marketed and paid for.

A few of the many marketing leaders who attended the convention of California fruit growers and farmers. Left to right, lower row: Lloyd S. Tenny, chief, Bureau of Agricultural Economics, United States Department of Agriculture; G. H. Hecke, director, California Department of Agriculture; Harden Bennion, commissioner of agriculture of Utah. Upper row: Seymour Jones, market agent of state of Oregon; Wells A. Sherman, market director of California; W. C. Reid, official representative of New Mexico at the convention

Prunes, Grapes and Peaches Were Greatest Problems

Prunes, grapes and canning peaches presented California's fruit industry with its greatest problems last season. Efforts continue to organize the prune industry on a broader basis. The California Vineyardists' Association is entering new fields of service and research for the grape industry. It

(*Concluded on page 17*)

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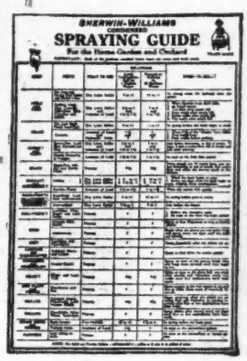
Remember, too, that S-W Dry Lime Sulfur is easier to handle, thereby lowering costs. There is no loss from deterioration, from freezing. It is the safest spray. S-W Dry Lime Sulfur is highly economical for a twofold reason —minimized production costs and increased yields.



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Buying an Orchard

By Lee Robinson

BUYING an orchard is a more particular piece of business than buying open ground. Regardless of the geographical location of the trees in consideration, it must be kept in mind that in case they prove to be less desirable than at first supposed, the situation is more unwieldy to handle than in the case of regular farm land. The variety of an orchard crop can only be changed by grafting or replanting of the trees, either of which is a slow and expensive process. Rejuvenating the trees, in case they need to be doctored in that manner, is also expensive and in many cases impossible.

A few steps which should be taken into consideration before placing your name on the dotted line which binds you to pay for an orchard are noted below. Some of these may not apply to the particular district in which you are interested, but undoubtedly most of them will. In order to be as definite as possible, let us number them.

Ascertain the Age of the Trees

1. If the trees are young, say less than eight years old, and have been pruned regularly, their age may be determined closely enough by counting the bends where the branches were pruned each season. If they are older, the best way is to count the concentric rings of wood growth; these are usually quite plainly marked.

The age of a tree is just as important as the age of a horse. In many ways, the comparison holds true. A horse has a limited period of active usefulness, and so has a tree. Both the average horse and the average tree are of little use when 25 years old. About 20 commercially profitable crops represent the number which an orchard can produce. There may be exceptions to that statement, but on the average it will hold true.

In addition to the age of a tree, its internal and external condition should be carefully examined. If a tree has been severely frozen, its life has been materially shortened. By sawing off several limbs, evidences of winter kill by freezing may be discovered. There will be a dead center in each limb if it has been frozen badly. Outward evidence of winter kill usually takes the form of limbs with small yellowish-green leaves or limbs upon which the leaves have died prematurely.

It is also well to dig around the surface of the ground at the base of the tree to discover evidences of borers, crown gall, root rot, etc. If the trees are young, there will oftentimes be a circle of jellied sap at their base during the spring months, if borers are present. Crown galls are sometimes on the under sides of the main roots of the tree and can only be seen by digging deeply beneath it. A hairy growth of small sprouts about the roots of a tree usually indicates crown gall growth.

The outward condition of the trees should be considered also. These conditions can best be observed during the crop period of the fruit. Just prior to harvest time is a good season of the year in which to examine an orchard with the idea of buying. Evidences of San Jose scale, aphis, red spider, etc., may be observed quickly at that time.

Is There a Sufficient Supply of Water?

2. In sections of the country in which the natural rainfall is sufficient, this question is not of such importance as in the irrigated regions. There the question of water is all-important. Without water your land will likely be worth but little more than the salvage value of the improvements upon it. Where the water for an orchard comes from, how much right you have to it, and the certainty of supply, are vital questions. Gravity water supply is best, if obtainable. A pumping plant on a large river is good if the lift is not over 25 feet. Artesian wells for irrigation are treacherous.

The Slope of the Land

3. Land which has a steep slope is difficult to farm profitably. Every field operation is made more expensive because of the tilted surface. In these years of keen competition among fruit growers, the man with heavily sloping land is at a distinct disadvantage. To irrigate steep land properly is next to impossible.

The Price of the Land

4. The price of a piece of orchard land should be arrived at by calculating the profits it is reasonably likely to produce over the life period of the trees. Consult a conservative banker (all bankers are not conservative) regarding the values of lands in the district in which you are interested. Remember, also, that when you pay more than $500 per acre for any orchard land, regardless of its location, you are trusting a great deal to providence. Better go very slowly when you get over the half-thousand mark, for providence may not dig down to help you pay the difference.

The Convertibility of the Land For Other Uses

5. This item might well have come first in the list because of its importance. Land which is suitable only for orcharding is worth much less than land which can be gardened profitably after the trees are pulled out. Conditions may arise at any time that would make your land without the trees more desirable than with them.

Nearness of Land to Market

6. If an orchard is situated on a good highway, near a local market where all or most of the products may be sold, this is a very distinct advantage. The possibilities of selling a portion of the crop to tourists is something which deserves consideration also.

If the fruit is packed and shipped to market, and an orchard is situated so far from the packing houses that the fruit is likely to be injured in hauling, or if it is difficult to get sufficient help to move the crop quickly, it is a serious drawback.

The Depth of Soil, Its Nature and Drainage Conditions

7. A good soil should be free from rock or gravel, and in an irrigated country it should have sufficient depth to hold the irrigation water after it is applied. Six or seven feet of good soil are necessary for water-holding purposes.

While good trees are often seen growing on rocky soil, the disadvantages of cultivation, lack of convertibility of the ground, additional water needed, etc., render the land less valuable than non-rocky.

A government soil map is a good aid in locating desirable ground, but if it is not obtainable, a posthole digger and lots of "elbow grease" are excellent. If the land has been severely leveled before being set out to trees, the extent of the areas cut deeply should be ascertained. Usually these places need to be petted in order to produce on an equality with the rest of the soil.

8. If alkali is visibly present to any great extent, let the orchard alone, regardless of how cheaply it is offered. Life is too short to fight alkali so long as good land is obtainable.

Susceptibility to Frost

9. While the data regarding frost and the damages from it are more or less meager, a general idea can usually be obtained from orchardists who have lived in the country a number of years. When one stops to consider that out of the 20 crops of fruit an orchard is likely to produce, frost will probably take six of them, the importance of frost questions may be appreciated. In general, frost areas can be grouped into four separate classifications:

A. *Areas free from frost dangers.*—These locations are usually along the large rivers in some cove which for reasons not so very well understood are rarely if ever visited by frost during the danger period of the fruit. Since these locations are likely to be more or less isolated from available help for harvesting, etc., their advantages in regard to immunity from frost are apt to be offset by disadvantages in other ways.

B. *Areas which have good "air drainage."*—These lands usually have quite a steep slope and are situated somewhat above the main orchard sections. The air seems to move away from them in such a way that frost is less likely than in other sections.

C. *Areas on a level section of a valley where the air reaches a dangerous temperature but still moves around sufficiently to make heating difficult.*

D. *Cold air pockets in which the frost danger is greatest.*

Naturally the most desirable land from the standpoint of frost immunity is the ground which because of its peculiar situation is virtually free from frost danger, but since these areas are hard to find, it is hardly worth while to dwell upon them. The orchards with good "air drainage" are

(*Concluded on page 33*)

In the Orchard Growth Means Progress

By J. L. Baskin

WHETHER your orchard be apple or peach, young or bearing, you are vitally interested in the growth that takes place. Growth is vital in the young orchard in order to insure a large, well-balanced bearing surface in future years. Growth is important in mature orchards, because growth and fruitfulness are inseparable. In the peach orchard, the 1926 season wood is the 1927 bearing surface. On many varieties in the apple orchard, the strong thick terminals of last year will bloom and fruit this season. The 1925 wood and spur growth will bear this season provided it is thick in diameter and exposed to sunlight.

Realizing the great value of growth in the orchard, it is a fair question to ask, "How may we obtain growth?" "What amount of growth is desirable?"

In answering these questions, the writer will not enter into all the phases of growth, but will endeavor to shed enough light on the subject so the practical grower may follow out the plan and obtain good results. Results after all are what the practical grower is interested in.

Poor Soil a Handicap

There is an old idea of long standing that fruit trees should be planted on poor soil, that is, too poor to grow good corn, cotton or tobacco. Often we see the farmer plant the home orchard on land that is too poor to cultivate, thus cheating the orchards out of a fair chance to succeed. There is another condition that exists in a majority of orchards that is quite fatal to their welfare. Many farmers follow the plan of plowing the orchard one time in the spring and then letting it grow up in weeds. It would be far better to plant the orchard in corn and cultivate it frequently than to plow it up once in the spring and leave it. Of course, corn is not a good crop to plant either in a young or a mature orchard, but the regular cultivation required by corn would more than effect the loss of plant food caused by the corn.

Cultivation Helpful

Cultivation is not essential to tree growth, but very frequently where land is reasonably fertile, tree growth can be obtained most economically by its practice. Cultivation conserves moisture, promotes sanitary conditions in the orchard and hastens nitrification of any vegetable matter that may be turned under. In addition, cultivation brings about many conditions which are favorable for tree growth.

Prune to Direct Growth

Tree growth is also influenced by pruning. Unless the orchardist has a definite plan for the future tree, he had better leave nature alone in forming the tree. A pruning butcher, and there are many, with the blind idea of suppression in his mind, can do serious and lasting damage to an orchard in a few hours. The wielder of the pruning hooks should keep definitely in mind a strong, well-balanced mature tree with a large bearing surface. Pruning should be practiced to direct growth rather than suppress it. Decide what type tree you want, that is, peach, low-headed with open center, or apple, modified leader with scaffolds growing out in spiral about the trunk, then proceed to bring this about. Remember that pruning directs the growth that is present and makes ready for the future growth, so it can form a tree of the desired type.

Nitrogen Limiting Factor

As valuable as cultivation and pruning are in obtaining tree growth, there is another factor quite as important—fertilizing. The tree must have sufficient plant food to make satisfactory progress. If this plant food is not already in the soil in available form, or is not added by applying barnyard manure or cover crops, it must be added by applying commercial fertilizers.

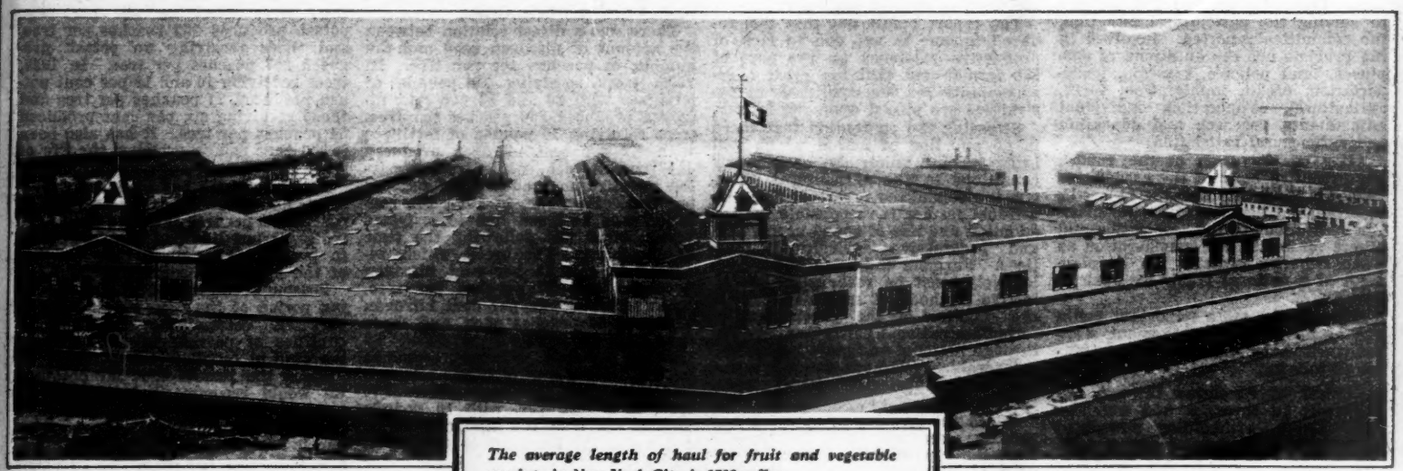
There was for many years a prevalent idea that fruit trees did not need to be fertilized. More recently it has been found that the addition of quickly available forms of nitrogen have given almost unbelievable results in both young and mature, cultivated and sod orchards. Not only have fertilizers containing large percentages of quickly available nitrogen given excellent results on growth, but in almost every instance they have increased the size of the fruit and the yields very materially. Occasionally, plant foods other than nitrogen have given results, but of the three principal plant foods applied in commercial fertilizers, nitrogen has proved the most profitable. In many orchards, the lack of nitrogen has been found to be the limiting factor and when added has more than doubled the previous yields.

Insure the Orchard Against Pests

But very frequently when one cultivates, prunes and adds fertilizer he encounters other troubles that inter-

(*Concluded on page 33*)

Opening the world's largest Produce Terminal



A Panoramic view of Piers 27-28-29 North River

Showing the three piers each of which is nearly 1000 ft. long and the extensive bulkhead constructions which have made available the extraordinary floor space.

The average length of haul for fruit and vegetable receipts in New York City is 1500 miles.

To feed the population of Greater New York fruits and vegetables were brought by rail during the last calendar year from all but seven of the 48 states of the Union.

These fruits and vegetables were in such quantities that they would have filled a freight train long enough to span the continent from ocean to ocean.

*

The value of the combined fruit and vegetable crop of the country has reached the astounding total of more than one and a half billion dollars. It has become one of the nation's major industries.

Gardens have expanded into extensive fields. Orchards have grown into tracts where fruit trees are numbered by thousands. Fresh vegetables and fruits heretofore considered as luxuries except for the brief season of local harvests have become essential parts of menus the year around.

Cooperation has made possible these rapid and far reaching changes—friendly cooperation between the producers, the distributors and the railroads.

It is with pride and in the spirit of this cooperation that the Pennsylvania Railroad opens to the produce trade of New York the doors of the world's largest and most modern produce terminal.

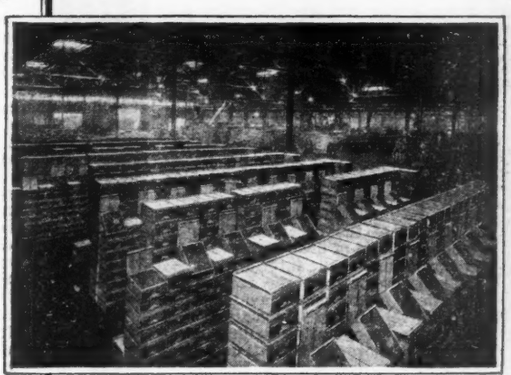
This terminal stands as a monument to the achievements of the trade in New York City and as a symbol of the faith which the Pennsylvania Railroad has in the further growth and development of this trade.

400,000 square feet of concrete floor space

There are approximately 400,000 square feet of hard surface concrete floor space entirely enclosed by steel and corrugated super-structure.

Interior view showing broad trucking space characteristic of all three piers

The novel bulkhead construction and the unusually wide driveways eliminate trucking congestion. The concrete floors throughout insure cleanliness and minimize the possibility of breakage.

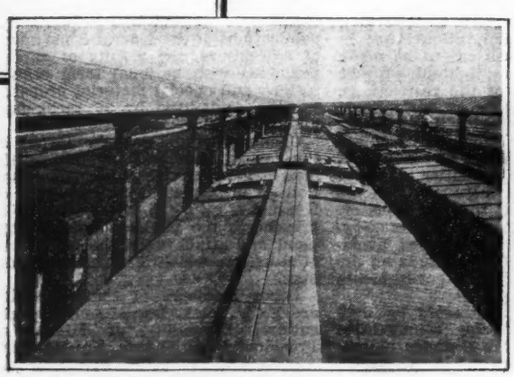


700 carloads can be displayed at one time

Convenient display space has been provided on the pier and bulkhead floors for more than 700 carloads of fruits, vegetables and dairy products at one time.

Plenty of light for display

The terminal is lighted throughout by artificial and natural light, reproducing daylight conditions over the 24 hours, and an efficient heating plant permits full operation during the period of low temperature.



Yard capacity 2200 cars

Expansion and improvement of Manhattan Produce Yard on the Jersey Meadows and its connecting yards makes this feeder for the produce terminal the largest and most convenient produce freight yard in the world with a total capacity of 2200 cars.

PENNSYLVANIA RAILROAD

Carries more passengers, hauls more freight than any other railroad in America

A Program for Agriculture

NOT ONLY broad and permanent agricultural legislation, but also many further changes and adjustments on at least 10 other points are needed before the country's distressed industry can be put on a satisfactory basis, a special committee which has been investigating the problem for the past six months reported to the American Association of Land Grant Colleges and Universities at the forty-first annual meeting of that association in Chicago, November 15-17.

No single emergency relief is equal to solving the agricultural situation, the committee reported. Involved in the problem are the questions of surpluses, land policies, taxation, transportation, credit, immigration, tariff, agricultural co-operation, individual adjustments, research and education and agricultural legislation.

After consideration of the report, the executive body of the association passed a resolution that the report be received and distributed to the member institutions of the association and others interested for consideration as a contribution toward the development of a national policy for agriculture.

Some of the more important methods of hastening improvement were summarized by the special committee as follows:

Control of surpluses through adjustments in acreages and numbers of livestock, withholding new land from cultivation, greater use of storage facilities, sound marketing organization and unified action in handling such parts of the commodity as may prove burdensome, and through favorable and sound types of legislation.

No further development of land for agricultural use and development of a far-sighted land policy.

Formulation of state programs for equalizing the tax burden so that part of the load now borne by farm property be transferred to other sources of income in the community and that a larger part of the total revenue be obtained from taxes levied on larger territorial units.

Early completion of the investigations of freight rates under the Hoch-Smith resolution and prompt action in putting into effect such readjustments as can be made, together with careful studies of the possible effects of the construction of deep waterways on the agriculture of the interior.

Making credit from the federal intermediate credit banks available to co-operative buying associations as well as to co-operative selling associations; a thorough educational campaign to transfer more of the credit from merchants to banks, and authorization to federal intermediate credit banks or some other agency to make capital loans on the amortization plan to co-operative buying and selling associations.

Alleviation of the farm labor situation through some other method than modification of immigration laws; in fact, if modifications are to be made they should involve a tightening rather than a relaxation of the restrictions.

Keeping tariff rates on agricultural products on a level with those on the products of other industries and announcement far enough in advance of proposed changes in duties on farm products so that farmers may have opportunity to adjust their enterprises.

Considerable extension of the co-operative form of business, and avoidance of a paternalistic attitude on the part of state and federal governments in legislative policy.

Changes and adjustments by individual farmers in the commodities they produce, in the methods of production they follow, and in the size of the business they operate.

Continuation of research to improve methods of economical crop and livestock production and economic and social conditions, together with improved educational opportunities for the farmer and his children.

Enactment of broad, permanent legislation that will enable agriculture to meet emergencies as they arise and that will provide for equalization with reference to such matters as taxation, tariff and freight rates, as well as provide for a sound policy and for further improvements of credit facilities.

Reviewing the agricultural situation, the committee reported that since 1920 agriculture has received a little more than 10 per cent of the total current income of the people of the United States, whereas from 1909 to 1919, inclusive, agriculture received not less than 20 per cent of the total income of the country.

The report points out that this reduced income is not due to lack of productive efficiency on the part of the farmer and that too great a responsibility for the conditions of agriculture are placed upon the farmer.

Stressing the contention that there is no one line of action which will bring about uniformly satisfactory conditions in the agricultural industry, the committee reported: "The individual farmer is responsible for the adoption and use of sound economical and progressive agricultural practices. Farmers individually and collectively must be responsible for effective methods of marketing. It is the function of the government to formulate national policy and provide, through national and state legislation, a favorable basis upon which a sound and vigorous agriculture may be maintained."

While not favoring or opposing any specific piece of agricultural legislation, the report pointed out: "Agricultural legislation is a far broader question than a single act of congress designated to alleviate the present situation. Any proposal that confuses the minds of the public by encouraging the idea that a single emergency relief act would meet adequately and permanently the difficulties under which farmers operate is prejudicial to the interests of agriculture.

"Agriculture should not be dependent upon legislation to be enacted after emergencies arise, but there should be enacted such broad, permanent legislation as will enable agriculture to meet emergencies as they occur. Involved therewith may be the removal of causes of severe agricultural depressions, the bringing to bear of such temporary action as will minimize the necessity for radical readjustments and the making of provisions which may prevent the severe fluctuations caused by seasonal variations in production.

"It is essential that legislation designed to aid in emergencies should be adopted in advance of such emergencies, that the plan involved should be simple in its administration and operation and that action should terminate as an emergency ends."

In making the study of the agricultural situation and preparing the report, the committee had at hand special reports and publications of the experiment stations and colleges, the publications of the federal department of agriculture, the results of correspondence with national farm organizations and special material prepared for the committee by 36 recognized authorities in various fields.

Commenting on the significance of the report, Thomas P. Cooper, chairman of the committee and dean of the College of Agriculture, University of Kentucky, said, "It is an attempt to present to the public a united viewpoint and attack upon the agricultural situation, which is a national problem."

Other members of the committee are F. W. Peck, Department of Agriculture, University of Minnesota; President F. D. Farrell, Kansas State Agricultural College; President Alfred Atkinson, Montana State College of Agriculture and Mechanic Arts; Dean H. W. Mumford, College of Agriculture, University of Illinois; L. N. Duncan, Alabama Polytechnic Institute; President Charles A. Lory, Colorado State Agricultural College; President H. A. Morgan, University of Tennessee; and G. F. Warren, College of Agriculture, Cornell University.

Fertilizer Experiments with Peaches

THE GEORGIA Experiment Station, in co-operation with the United States Department of Agriculture, has been conducting fertilizer experiments with peaches for six years. Twenty-one different fertilizer formulas were used. Nitrogen was used from four different sources and potash from three sources. For five years the experiments were conducted on the farm of L. B. Rumph, of Marshallville. In 1927, the experiments were conducted on Piedmont soil in the orchard of O. T. Moreland, near Griffin.

There was a direct relation between the amount of nitrogen used and the number of peaches set per tree. In 1925, trees receiving 10 pounds of fertilizer with 10 and 12 per cent nitrogen produced 462 peaches per tree, trees receiving 10 pounds of fertilizer with six per cent nitrogen produced 431 peaches each, while trees receiving no nitrogen produced 207 peaches per tree. However, in 1927, the condition was reversed due to a freeze which came just following the time of blooming. The trees which received 10 and 12 per cent nitrogen produced only 27 peaches per tree, trees receiving six per cent nitrogen produced 34 peaches each, and those receiving no nitrogen produced 88 peaches per tree. Nitrogen seems to be the determining fertilizer element, but when more than eight per cent is used in a fertilizer, with 10 pounds applied per tree, the foliage becomes too dense for the fruit to color well and the young fruit seems more susceptible to late winter freezes. From four to six per cent stimulates sufficient growth for the tree to set the desired number of fruits.

Nitrogen delays ripening of peaches. In 1927, trees receiving no nitrogen completed ripening their crop on the day of the first picking from those trees receiving a fertilizer mixture containing 12 per cent nitrogen. Thus far no consistent differences have been found between nitrogen derived from nitrate of soda, sulphate of ammonia, cotton seed meal and dried blood. The amount of rainfall between the time of application of the fertilizer and the harvest of the peaches may alter the effects from year to year.

Potash has been found to contribute to the general vigor of the tree and to insure a better set of fruit. In 1925, trees receiving 10 and 12 per cent potash produced 442 peaches per tree, trees receiving six per cent potash produced 292 peaches per tree, and those receiving no potash produced 207 peaches per tree. In 1927, trees receiving 10 and 12 per cent potash produced 74 peaches per tree and those receiving six per cent produced 54 peaches per tree. It has also been found that potash prolongs the life of fruit in storage.

Acid phosphate has produced practically no effect on the number of peaches set per tree or on the size of the fruit. It has likewise been negligible in prolonging or shortening the life of the peaches in storage.

Seasonal conditions during the growing period of the crop play a greater part in determining the keeping qualities of peaches in storage than the kind of fertilizer used.

From the results thus far obtained we would recommend for a bearing peach orchard a fertilizer mixture containing from eight to 10 per cent phosphoric acid, four to six per cent nitrogen and from five to seven per cent potash. It is understood, of course, that the sandy loam soils of the Coastal Plains need somewhat more potash than the heavy soils of the Piedmont section. The nitrogen may be varied according to the cover crop used and the amount of humus in the soil. The phosphoric acid will serve to improve the cover crop as well as for plant food direct to the trees.

Ohio Presents Farm Relief Plan

A PLAN for giving equality to agriculture has recently been advanced by the Ohio Farm Bureau Federation which appears to have real merit. It has the backing of the Ohio Farm Bureau Federation and the executive committee of the Ohio State Grange.

It is claimed that the plan would give benefit to farmers on crops of which a surplus is produced; that it would discourage over-production; that it would afford protection against competing commodities; that it would not discriminate against some groups of farmers in favor of others; that it would not set up intricate machinery for its operation; that it will encourage co-operative marketing; and that it will safeguard the United States Treasury and the co-operatives against loss.

The outline of the plan is as follows:

1. A Federal Farm Board, headed by the Secretary of Agriculture, to act (in like manner as the Federal Reserve Board) in the stabilization of markets, in general supervision of other boards set up, and to be in charge of federal funds appropriated for marketing purposes.

2. Advisory Councils for each commodity, to be selected by the Federal Farm Board, members to be nominated by recognized co-operatives. These councils to find the facts as to each particular commodity and present them to the public and the farmer-grower.

3. Commodity Stabilization Corporations to be set up for each commodity to centralize control and responsibility. These to be formed from the co-operatives handling the same commodity and be selected by the co-operatives subscribing to the capital stock of the Commodity Stabilization Corporation.

4. $300,000,000 revolving fund; $50,000,000 to be loaned to co-operatives to purchase plants or loaned on physical properties already owned by co-operatives; $250,000,000 to be loaned for the purchase of farm products by the Commodity Stabilization Corporations upon approval of the Federal Farm Bureau.

5. The debenture plan to be put into effect on protected farm commodities of which the United States produces a yearly surplus, but only as to surpluses in the hands of the recognized co-operatives handling such commodity. These co-operatives to be so organized that all owners of such commodities will have the privilege of marketing through them, non-members paying overhead charges.

6. The Federal Farm Board to be required to find the average yearly production of farm commodities of which the United States produces a surplus for export and the estimated production for the current year. The full amount of the debenture to apply only in the crop years in which the surplus is the average or below the average. When the yearly production is estimated by the Federal Farm Board to be above the average, then the debenture to be reduced in proportion that the year's production exceeds the yearly average.

7. All imported agricultural products, which compete with United States agricultural products, either directly or indirectly, to bear a sufficient tariff rate to afford the home product protection, and, at the same time, furnish additional revenues to assist in caring for the debentures issued.

8. The Tariff Commission, or some other body to be created, given the duty of finding the estimated added cost, by reason of the application of the debenture, of the production of animal products, and the president to be given power to increase the tariff on these animal products in the proportion as the debenture plan increases their cost of production.

Coming Horticultural Meetings

ANNUAL MEETING Nebraska State Horticultural Society, Lincoln, January 3-5. Secretary, E. H. Hoppert, Lincoln.

Thirty-eighth annual meeting South Dakota State Horticultural Society, Lincoln Hotel, Watertown, January 10-12. Secretary, N. E. Hansen, Brookings.

Annual meeting New York State Horticultural Society, Edgerton Park, Rochester, January 11-13. Secretary, Roy P. McPherson, Le Roy.

Twenty-third annual meeting Tennessee State Horticultural Society, Hotel Read, Chattanooga, January 17-18. Secretary, G. M. Bentley, Knoxville.

Twenty-third annual meeting Tennessee State Nurserymen and Ornamental Growers' Association, Hotel Read, Chattanooga, January 19. Secretary, G. M. Bentley, Knoxville.

Annual meeting Hamilton County Beekeepers' Association, Hotel Read, Chattanooga, Tenn., January 20. Secretary, G. M. Bentley, Knoxville.

Winter meeting Ohio State Horticultural Society, Horticultural Building, Ohio State University, Columbus, January 30-February 2. Secretary, F. H. Beach, Columbus.

Annual meeting Idaho State Horticultural Society, Boise. Meeting to be held latter part of January, date not announced. Secretary, M. L. Dean, Boise.

Winter meeting Oklahoma State Horticultural Society. Meeting to be held in January, date and place not announced. Secretary, George W. Cochran, Stillwater.

Seneca Cherry Giving Good Results

THE SENECA, a new sweet cherry developed by the New York Agricultural Experiment Station, has now produced five crops on the station grounds and is all that it gave promise of being when it first fruited in 1920.

The fruit is extremely early and of excellent quality and is therefore well adapted for sale in roadside and local markets. It is two weeks earlier than Black Tartarian, the standard sweet cherry for New York. The fruit is large, purple-black, with soft, juicy, melting flesh and a rich, sweet flavor. The tree is vigorous and productive, and the variety is hardy in both wood and bud.

The Seneca is a cross between the early purple Guigne and an unknown early sweet cherry, according to Dr. U. P. Hedrick. Planting stock of the variety can be obtained at cost from the New York State Fruit Testing Co-operative Association, Geneva, N. Y.

Hardy Roots as Important as Hardy Tops

IN A RECENT ISSUE of the Minnesota Horticulturist, Prof. W. G. Brierley of the University Farm at St. Paul reports results from a rootstock investigation on apples in Minnesota. He states that the behavior of a variety depends more upon the method of propagation than upon the place where the nursery stock was grown. Hardy roots are as necessary in Minnesota as hardy tops. French Crab roots are generally too uncertain with regard to hardiness to warrant their use in Minnesota unless so handled during nursery propagation that the trees may be set deeply in the orchard soil. When a French Crab seedling is budded, some of the stock remains at or close to the surface where injury may be expected. When whole roots are used for grafting, the same undesirable condition may be obtained. When piece roots are used with long scions, roots of unknown degrees of hardiness are certain to be set deeply in the soil where winter injury will not be generally expected and hardy scion roots may frequently develop. In the experiments, losses of this kind were comparatively small, although the length of scions used varied. By placing the more or less tender French Crab roots deeper in the soil, the injury to these roots was markedly less than in the case of trees propagated by budding.

Roots of unknown hardiness even with a long scion are not entirely safe. In one study made at the University Farm, root killing occurred to a depth of 14 to 16 inches. In late years, the practice has been developing among Minnesota nurserymen of growing seedlings from hardy apple or crab varieties for use in propagating. Whenever such generally hardy seedlings are used, there is a fair chance that the hardy variety will have a hardy root regardless of whether the propagation was by budding or by root grafting. This is an obvious advantage which should be given due weight by growers when selecting nursery stock for planting in the North.

Judge (in assault and battery case)—What weapon did you use to reduce the complainant to this condition?

Defendant (proudly)—No weapon at all, Yer Honor. It was all hand work.—*Boston Transcript.*

For Street or Stream

—get the extra protection, the extra service of pressure-toughened rubber

WALKING, working, wading cannot wet your feet when you wear the right kind of Goodrich Hi-Press Rubber Footwear.

Of course, any kind of rubber gives you the protection when it is new. But you keep right on getting protection from Goodrich Footwear, because it is made with rubber *toughened by pressure* at the time it is cured.

Women are sure of lightness, combined with longer wear, in the neat, trim Hi-Press rubbers.

Zippers—with all their smart style—are always made with Hi-Press soles. In an instant that gleaming, vertical line of the HOOKLESS FASTENER makes them open or close.

And in boots, the Hi-Press treatment is the most important of all! It squeezes the rubber into the fabric—joins all the layers of the boot stoutly together. With this pressure-cure, reinforcements have a real meaning, and thick, husky soles give you extra months of service.

Over fifty thousand department and footwear stores handle Goodrich Hi-Press Footwear. Experience shows what the public wants.

THE B. F. GOODRICH RUBBER COMPANY, *Est. 1870*
Akron, O. *In Canada:* Canadian Goodrich Co., Kitchener, Ont.

Listen In every Wednesday night, Goodrich Radio Hour 9:30 P. M. Eastern Standard Time over WEAF and the Red Network

At top: Black Zipper

In circle: No. 760 Brown Boot

At left: No. 8514

Goodrich HI-PRESS *Rubber* Footwear

REAL RUBBER BOOTS—10c A PAIR

Midgets, of course, but dandy souvenirs. Just 2½ inches high—boys and girls can find many ways to have fun with them. Send 10c in coin or stamps, we'll send them postpaid. *Please write plainly or print. Mail to "Boot Desk 1C," The B. F. Goodrich Rubber Company, Akron, O.*

NAME.....

R. F. D.....

CITY..... STATE.....

How Farmers Can Go Broke

TEN WAYS for a farmer to go broke are given by the Agricultural College of the University of Tennessee as follows:

1. Grow only one crop.
2. Keep no live stock.
3. Regard chickens and gardens as nuisances.
4. Take everything from the soil and return nothing.
5. Don't stop gullies or grow cover crops—let the top soil waste away.
6. Don't plan farm operations. It's hard work thinking, trust to luck.
7. Regard your woodland as you would a coal mine; cut every tree, sell the timber and wear out the cleared land, cultivating it in the same crop year after year.
8. Hold fast to the idea that the methods of farming employed by your grandfather are good enough for you.
9. Be independent—don't join with your neighbors in any form of co-operation.
10. Mortgage your farm for every dollar it will stand to buy things you would have cash to pay for if you followed a good system of farming.—*Southern Cultivator.*

Position of Graft Is Important

A RECENT REPORT of the Wisconsin Agricultural Experiment Station gives results of some observations made by Dr. R. H. Roberts on the influence of grafting on nursery tree growth.

Dr. Roberts found that the position of the bud in relation to the callous of the graft materially affects the development of the tree. The top bud of the graft usually makes the best growth. The calloused union takes place along the matched tongues of the graft. The sap rises most rapidly in a vertical line. It follows then that grafts make a strong growth if the top bud is placed directly above the point of the calloused union or on the matched side of the graft. It is an easy matter to set the grafts so that the top buds will be in a position directly above the callous. A higher percentage of commercial trees will thus be obtained.

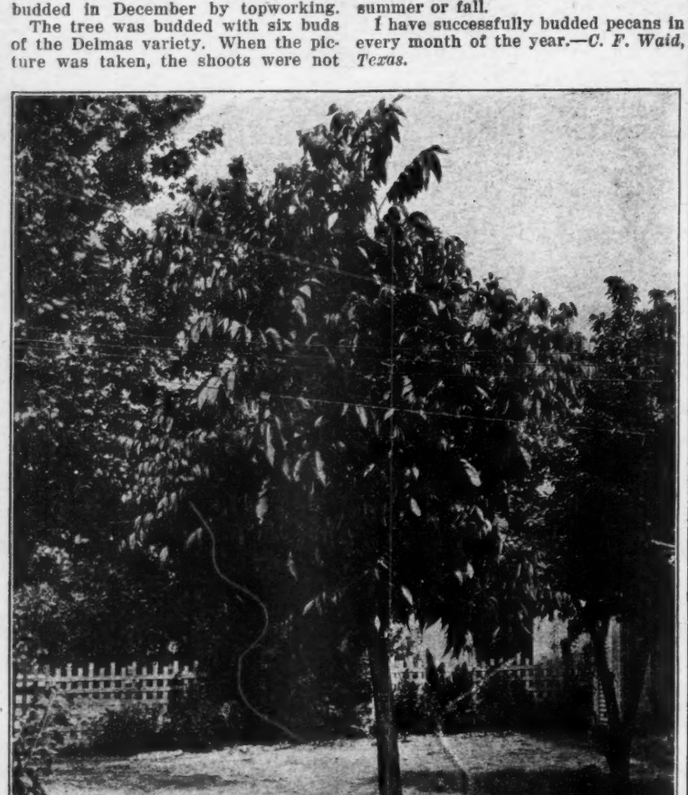
Budding Pecans in December

EDITOR, AMERICAN FRUIT GROWER MAGAZINE: I am sending you enclosed a picture of a pecan tree which was budded by me on December 14, 1925, and photographed July 2, 1926. So far as I have been able to determine from the Department of Agriculture, state agricultural experiment stations and other institutions, this is the first pecan tree in the United States that has been successfully budded in December by topworking.

The tree was budded with six buds of the Delmas variety. When the picture was taken, the shoots were not less than three feet long and liberally branched. Some of the compound leaf stems measured three feet each in length.

Dormant or winter budding provides a much longer season in which the buds can be inserted and profitably forced the first year. Buds inserted in December, January and February in southern pecan territory can be grown the first year to a size that will equal that of buds put in the preceding summer or fall.

I have successfully budded pecans in every month of the year.—*C. F. Waid, Texas.*



The entire top of this tree was produced in less than seven months from six buds set on December 14, 1925

Shredded Oiled Paper Cuts Apple Scald in Barrel Pack

THE METHOD of controlling apple scald in boxed apples by wrapping the fruit in oiled paper, as developed by the United States Department of Agriculture, has proved so satisfactory that a modification of the method is being tested for barreled apples. When the barrel pack is used it is impracticable to wrap each apple, but satisfactory results can be obtained by scattering throughout the pack a quantity of shredded oiled paper. The department has tested the efficacy of the modified method in a commercial way for three seasons and reports that when properly distributed in the barrel or other package shredded oiled paper has proved highly efficient in the control of the disease.

Nineteen different tests covering seven different varieties were made. In the untreated barrels from 24 to 96 per cent of the apples, or an average of 67 per cent, were scalded to such an extent as to be discriminated against on the market. On the other hand, the barrels containing shredded oiled paper showed only an average of four per cent of the fruit scalded. Eight of the treated barrels were entirely free of the disease. Tests have also been made with apples in hampers, baskets and boxes with equally good or somewhat better success.

It is generally estimated that the shredded paper adds 20 to 25 cents a barrel to the cost of packing the apples. If the fruit is to pass into consumption early in the season, there may be little chance of recovering this amount in the selling price, but when it has been held beyond the peak of the season for the variety, profits several times greater than the cost have often been realized.

Shredded paper is not a guaranty against all misfortune, says the department. However, when properly applied so that each apple comes in contact with the oiled paper, it can usually be made a source of profit to the grower, and by adding to the keeping quality of the apples, it contributes a stabilizing effect to the apple industry.

Can Resell Outside Grown Nursery Stock If Certified

THE ILLINOIS Inspection Law provides that a nurseryman may sell under his own certificate nursery stock purchased from other nurseries, provided such stock is accompanied by a certificate of inspection approved by the state department of agriculture.

Recently the Department of Agriculture issued a list of accredited inspectors in the various states whose certificates will be recognized in this connection.

The Editor's Mail Box

Golden Delicious Requires Moisture in Storage

Editor, AMERICAN FRUIT GROWER MAGAZINE: Will you please tell me what is wrong with my Golden Delicious apples. I put them in a cellar on October 7 that was not very cold owing to the warm weather at that time. They have shriveled badly. Were they picked too soon or was the cellar not cool enough for them? I will appreciate your advice so that I will not make the same mistake next year.

ANSWER: The Golden Delicious wilts easily in storage due to evaporation from the large pores in its skin. Evidently your cellar is fairly dry. You can prevent the shrinking by picking the apples when ripe, but not over-ripe, and storing them immediately in a cool, moist place. The temperature for common storage should be as low as possible, though not below freezing. You can often keep the temperature lower in the early fall than otherwise possible by opening the doors or windows in the evening to let in the cool air during the night and by closing them during the day to keep out the warm air. Regarding moisture, you can take care of this by moistening the floor occasionally with water. An earth floor is better than a concrete floor for cool storage, because it permits moisture to rise in the air. If you will keep your air moist next year and keep the temperature as low as possible, I think you will have no trouble in storing the Golden Delicious successfully.

Thinks Banana Offers Unfair Competition

EDITOR, AMERICAN FRUIT GROWER MAGAZINE: Your editorials regarding a tariff on bananas are very timely, and I hope you will continue your efforts until a tariff is placed on this trust grown fruit produced by the cheapest labor in the world and which American people pay for out of all proportion to its value. I have seen this cheaply produced fruit sold by high pressure advertising methods in our fruit growing communities when apples and other fruits were rotting on the ground.

The fruit growers of the country have certainly been a lot of "doughheads" because they have not made an effort to get a tariff placed on this unfair competition, and I hope you will be able to place a tariff on bananas and thus bring their unfair competition to an end.

I have noted with regret that some women writers have been boosting the consumption of bananas in farm papers. They are unfit to eat in the condition that most people use them. Before they are really ready for consumption, they should be showing black spots on the skin, and most people do not care to eat bananas when this stage has been reached.—*Bernard Hahn, Member Wisconsin Legislature, Fish Creek, Wis.*

Forming the Framework in Young Apple Trees

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have some apple trees that were planted this spring as one-year-old trees. They were headed back to 24 inches. During the summer they put out a number of branches. Should these be left to form the framework or should they be pruned off, leaving only a central leader? If I prune them off, I would have to get the scaffold branches from the leader next year, and this would probably delay the growth a year.—R. O. E., Illinois.

ANSWER: The method to be employed will depend on the height at which you want your framework. If you want a high headed tree, it would be best to trim off the laterals and allow new ones to form on the central leader next year. The tendency is toward low headed trees nowadays, and if your lateral branches are low enough to make the kind of framework you want, I would recommend that you leave them by all means. Cutting them off will delay the tree, as you state, and such heavy pruning tends to check growth very materially.

About three or four laterals are sufficient to form a good framework at the start. They should be well distributed around the tree, and they should also be well spaced vertically. Quite often growers allow the laterals to come out too closely together. If the tree is not tall enough now to permit proper vertical spacing, you can form some of the laterals now and add more as the tree reaches the proper height. The best growers are now forming their framework at from two to three feet from the ground.

Leaf Mold for Mulching Purposes

Editor, AMERICAN FRUIT GROWER MAGAZINE: Can you give me any information as to the value of leaf mold raked up in a woodlot for mulching cherry and pear trees? Is there enough fertility in such material to warrant the expense and labor of collecting it?—F. A. D., Michigan.

ANSWER: There is no doubt but what leaf mold from a woodlot is valuable for mulching cherry and pear trees. It will protect the ground against deep freezing during the winter and this may decrease damage to roots by winter killing. However, the greatest value, in my opinion, will come from the fertilizing effect. The leaves contain considerable quantities of nitrogen and mineral materials, and the leaf mold, therefore, is rather rich in these materials. In addition, the mold supplies large quantities of excellent organic matter.

I think that it would be well to use all of this material you can, provided it is not too big a task to gather it. The leaf mold from deciduous timber is better than that from evergreen timber.

Believes Poor People Should Have Cheap Fruit

Editor, AMERICAN FRUIT GROWER MAGAZINE: In your October issue you suggest a tariff on bananas. I have always raised fruit and in late years I found a decreased demand for apples in our small villages. First-class McIntosh apples sell for $1\frac{1}{4}$ a barrel. The banana is more nourishing and is preferred by the medium class of consumers. The price is 30 to 35 cents a dozen, which is plenty high. A tariff would increase the price to the consumer.

Let the poor enjoy this fruit, for even if apples sold at $1 a barrel, they would not buy them. The fact is there are too many orchards in the West. I have done best by peddling apples to friends and acquaintances at a reduced price for medium quality stock. It would be an imposition on the people to raise the prices on bananas.

I like your magazine very much and no doubt many homes have fruit trees and berries in their gardens as a result of its suggestions.—Charles E. Kellogg, Connecticut.

ANSWER: It is a very worthy thing, of course, to supply poor people with cheap fruit, but we cannot see that it is the responsibility of the fruit growers to perform this service. If charity is needed in such cases, it is the duty of the whole country to furnish it rather than the fruit growers alone.

We question if there would be too many orchards in the West or elsewhere if bananas did not offer so much competition to home grown fruits.

Lime for Strawberries

Editor, AMERICAN FRUIT GROWER MAGAZINE: I thought my soil in my strawberry patch was sour, so I applied lime between the rows. After I did this, I noticed an article in a farm paper advising against the use of lime for strawberries. Please tell me what effect lime has and what to do to counteract its effects if injurious.—H. J. K., Indiana.

ANSWER: A considerable number of strawberry growers feel that it is inadvisable to apply lime where this crop is to be grown. However, there are others who seem to think otherwise. The character of the land probably has a great deal to do with it. Land that is extremely sour may

be benefited for strawberries by applying some lime, in the opinion of some experts. However, it seems that strawberries prefer a slightly acid reaction. In other words, it is not generally considered advisable to apply enough lime to correct all of the acidity.

If you have reason to feel that you have used too much lime, you can probably ameliorate the effect to a certain extent by applying well rotted manure between the rows and cultivating it into the ground. You might also use ammonium sulphate as a source of nitrogen. This causes an acid reaction which to a certain extent would counteract the effects of too much lime. I would suggest that you use not over 100 pounds of ammonium sulphate to the acre for one application, since too much of this material may cause damage.

Dyer Favors Tariff on Bananas

EDITOR, AMERICAN FRUIT GROWER MAGAZINE: Allow me to commend your splendid attitude in the matter of the banana tariff.

It amazes me to think that the political party in power with its steadfast advocacy of still higher tariffs should be so derelect in its duty towards the American fruit grower as to permit free trade in bananas.

President Coolidge in his recent utterance, predicated upon a report of the Business Men's Commission dealing with the problems of agricultural relief, took issue with them sharply when they suggested the lowering of tariffs to benefit agriculture. How can he justify a moment's continuance of free trade in bananas which so seriously effects an already overburdened American industry?

I hope you will continue to hammer away at this matter until a high duty is levied on bananas.—*John Napier Dyer, Vincennes, Ind.*

Pruning in Cold Weather

Editor, AMERICAN FRUIT GROWER MAGAZINE: Would any bad results follow pruning of apple trees in cold weather during December, January and February? I have been told not to prune before March. I wish your paper the best of success. I hope you will be able to reach every fruit grower with it.—D. S. S., Missouri.

ANSWER: No bad results will follow the removal of branches from apple trees in December, January or February. This work can be done at any time of the year when the weather is suitable. I would suggest that you prune your trees whenever you can find the time. You will find excellent information on pruning apples in the articles by T. J. Talbert in the December and January issues.

When it comes to heading back the branches, I would suggest that you do this work in March. If this work is done early in the winter, the twigs are likely to die back, and thus the growth would not be made from the bud desired.

Currants and Gooseberries Harbor White Pine Blister Rust

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have some red and white currants that are growing within 100 feet of some pine trees. I am informed these currants are injurious to the pine trees. Will you kindly tell me if this is correct. —T. H., Pennsylvania.

ANSWER: Currant and gooseberry bushes harbor the white pine blister rust in one of its stages. The disease spreads to five-leaved pines growing in the vicinity and once the pine is affected, it never recovers. Fortunately, the rust is not spread directly from one tree to another. A period of incubation on currant or gooseberry leaves is necessary before it can again attack pines. The disease is so serious on currants and gooseberries that it may spread for several miles from one point of infection during a single season.

The best thing for all fruit growers to do in districts where five-leaved pine is grown for commercial purposes is to discontinue the growing of currants and gooseberries within one-third mile of the pine trees it is desired to protect. The occurrence of blister rust in New England and in the Middle Atlantic states has caused most of these states to adopt regulations for the control of currant and gooseberry planting in the pine growing sections. All growers in these sections should consult the state nursery inspector if they are intending to grow or transport any gooseberries or currants. This applies to flowering currants for shrubbery purposes as well as to commercial plantings.

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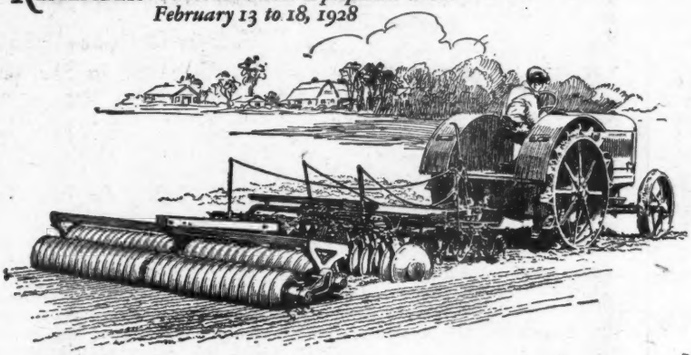

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Amount of Fertility in Rain and Snow

Editor, AMERICAN FRUIT GROWER MAGAZINE: Do rain and snow add any fertility to the soil?—R. B. T., Tennessee.

ANSWER: Rain and snow take impurities out of the air during their fall and bring them to earth. Nitrogen is practically the only fertilizing element brought to the soil by rain and snow. From five to seven pounds of this element per acre are brought to the earth each year by snow and rain. In our large industrial centers, where the air contains more smoke and dust, the amount is greater.

Control of Curculio

Editor, AMERICAN FRUIT GROWER MAGAZINE: My plum trees bear every year, but the fruits fall before they ripen. Each plum has a speck on it, indicating that it may have been stung by some insect. Will you kindly tell me what to do in the matter.—J. R. W., West Virginia.

ANSWER: It is probably the plum curculio which is causing your trouble. The eggs are laid by a beetle in punctures made through the surface of the fruit. The young worms burrow through the fruits after hatching. It is quite common for infested fruit to fall after it reaches some size.

The curculio can be very largely controlled by keeping the fruit thoroughly sprayed with arsenate of lead during its early growth. Two pounds of powdered arsenate of lead should be used to 50 gallons of water. The first spray should be applied about the time the husks are falling from the young fruits. Another application should be made 10 days later, and a third application should be made about three weeks after the second spray. It is probably a good thing to add calcium caseinate to the spray mixture to make the material spread better and adhere better to the foliage and fruits.

Another help in controlling curculio is the plowing or disking of the soil in the fall of the year. This exposes the pupae to the weather, causing many of them to die during the winter.

Shrubs for a Low, Tight Hedge

Editor, AMERICAN FRUIT GROWER MAGAZINE: Will you please advise me as to the kind of shrubs that would be good for a hedge about 40 feet long between my house and barn. I want something about three feet high that will hold poultry.—H. A. W., New York.

ANSWER: There are several shrubs you might use. It seems to me that two of the most desirable would be the Japanese barberry (*Berberis Thunbergii*) and the privet (*Ligustrum Regelifolium*).

World Markets
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THE freight services of the United States Shipping Board offer a natural outlet for the export of surplus farm products.

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The Market Review

By Paul Froehlich

United States Bureau of Agricultural Economics

WINTER SHIPMENTS of fruits and vegetables were running considerably behind last season's corresponding volume, chiefly because of the lighter output of oranges, grapefruit and eastern apples. Southern truck crops started early, and supplies were rapidly increasing. Potato markets remained rather dull and weak, but prices of onions, sweet potatoes and New York cabbage began to show improvement. Apples advanced considerably, while citrus fruits were declining from their high opening levels. For many important lines, better marketing conditions usually prevail after the Christmas holidays.

Can't Sell His Apples

One complaint has been received among scores of letters. As a rule, everybody seems pretty well satisfied with the way apples have been moving this season and with the prices received. But a grower in one of the western states asks: "What is the matter with our half crop of apples? There is almost no market here or anywhere else for apples, so far as we can find out." And yet, the statistics indicate that growers in that state have been receiving 50 per cent to 75 per cent more than they did last fall.

In proportion to the size of the crop, apples have been moving from that section more actively than they did a year ago. Furthermore, the general price level for this fruit has been tending upward. Demand usually slacks for a short period before the end of the year, but there is no reason to feel discouraged over the present situation. Rather, just the opposite feeling seems to prevail nearly everywhere.

It happens that the quality of the apple crop in this particular grower's state is lower than the average and six points below that of last year. This may tend to slow up the sales. But, with proper grading and packing, a careful study of daily market reports, proper connections with city dealers and an energetic sales policy, there should not be any great difficulty in moving this season's crop. Good apples are bringing good prices and are being sought after. Press reports indicate that some buyers from the United States have been seeking supplies in Canada to supplement the domestic crop. The fact that exports to European and other markets are not much over half last season's corresponding volume is accounted for by the lighter production in this country and the heavier supply of native apples in England and on the continent. European apples stored on barges in the river at Berlin were four times as plentiful as a year ago.

Shipments Active from West

The most striking feature of carlot shipment reports is the fact that total apple movement from western states this season now exceeds the record for all eastern and midwestern states combined. By early December about 34,000 cars had come from the West, compared with 32,000 from the East. In other recent seasons, eastern shipping sections have been 15,000 or 16,000 cars ahead of the record for western states, as might be expected from their proportionate advantage in production. The West now being ahead of the East speaks very plainly of the short crop east of Colorado. At this time last year, more than three-fourths of the season's shipments were completed. If the same percentage holds good this year, it would mean that the season's output may not greatly exceed 90,000 cars and that only about 25,000 are yet to move. Last season, about 134,000 cars were shipped, but this year's commercial crop is fully one-third lighter than that of 1926. To December 3, the West lacked 7000 cars, or one-sixth, of equaling its 1926 total to this time, while the East was short by 25,000 cars, or 43 per cent.

Western New York shipping points quoted best cold storage Baldwins at $6.60 per barrel. Rhode Island Greenings touched $8.50, with a few sales at $8.75. Several varieties of Extra Fancy boxed apples strengthened at Pacific Northwest points and closed at an f.o.b. range of $2-$3.25, or nearly $1 above last December's price. City markets were quoting barreled stock at $5-$11, depending mainly on variety and condition.

Apple Prices Compared

A curve representing average prices paid to apple growers showed its usual dip during August and September, but has since recorded a monthly rise. In mid-June and mid-July, the estimated farm price averaged around $1.42 per bushel. By September, it had declined to $1.31. A four-cent advance occurred during the following month and a further gain of seven cents by mid-November. The November level of $1.42 compared with 82 cents a year ago and a pre-war November average of 69 cents per bushel.

This composite price, including local sales of all grades and qualities of apples, shows interesting variations in different sections of the country. Lowest farm prices during November, 1927, prevailed in the western states, whereas the South Atlantic region registered the lowest level at the same time in 1926. This locates rather definitely the points of heaviest production. The important Potomac-Shenandoah Valley region was noted for its exceptionally large crop of apples in 1926, and the Pacific Northwest has a fairly heavy crop this season, as reflected by the lower prices in those sections.

The November average farm price of $1.26 per bushel in western states represented an increase of 50 per cent over the level of that region the year before. Growers in the South Atlantic territory were averaging the next highest returns of $1.40 per bushel, compared with 66 cents in November, 1926. In ascending scale, the North Atlantic average of $1.44 was nearly twice as high as the price in that section during the latter part of 1926. Growers in the North Central area were receiving $1.63 in November of this season, or about 65 cents more than the year before, but the highest November average of $1.75 per bushel prevailed in the South Central region, where values were double those of the same time in 1926. Average United States price per barrel was $4.12, compared with $2.53 a year ago and $3.78 in October. As to barreled apple prices, growers in the North Central region were receiving the highest average of $4.86, while the barrel equivalent in western states was at low level of $3.78.

Storage Holdings at Peak

The peak of cold storage holdings of apples usually is reached in December. The official report for December 1 indicates that movement into storage during November was much lighter than in November, 1926, chiefly because of the smaller crop. On the first of November, total cold storage holdings were 18 per cent less than the year before, but by December 1, this shortage had increased to about 25 per cent. During November this season, the net accessions to cold storage stocks of barreled apples were only 200,000 barrels, compared with 1,366,000 during November, 1926. The net increase in cold storage supplies of boxes was 4,800,000, as against 5,560,000 during the month of November last season. Movement of bushel baskets into storage totaled 634,000, or one-third more than went into cold storage plants during November, 1926. It seems that either a larger share of the crop is being packed in baskets this year or that more baskets than usual are being held for the late market. Reports of cold storage houses for December 1 showed a total of 2,066,000 barrels, 13,331,000 boxes, and 3,903,000 bushel baskets of apples on hand. This is considerably less than half as many barrels as were in cold storage on December 1, 1926, and almost 60 per cent less than the five-year average for barrels in December. Holdings of boxes were more nearly like those of a year ago—13,331,000 this season as against 15,083,000 on December 1, last season and a five-year average of 11,836,000 boxes. The stocks of bushel baskets in cold storage houses were 44 per cent greater than the year before. Total combined holdings were not only 25 per cent lighter than on December 1, 1926, but about 12 per cent less than the average for this time of the year.

The Citrus Situation

Press reports indicate that refrigerated vessels will carry Florida citrus fruit directly from Jacksonville to Liverpool, England, this season. The British market has been expanding, and now fully 70 per cent of all grapefruit supplies in the United Kingdom come from the United States. It seems probable that total exports of citrus fruit will increase this year. During 1926, Canada took about half our exports of grapefruit and four-fifths of the total exports of oranges and lemons.

In early December, the Bureau of Agricultural Economics issued a 10-paged, mimeographed report on "Market Prospects for Citrus Fruit, 1927-28." Copies can be had on request by those who need them. The farm value of citrus grown in the United States now exceeds $100,000,000 annually. The industry has shown rapid expansion, particularly in Florida, California and Texas. California probably experienced its peak production during the past season, but Florida, Texas and a few other states give evidence of heavier crops in years to come.

The present citrus season looks rather encouraging. Lighter production than last year is forecast in both Florida and California. Shipments were delayed, but there was plenty of fruit for the Christmas trade. The relatively light crop of apples in the United States and Canada this season may tend to increase the sales of citrus fruit. What effect the higher price of apples will have is problematical. If export movement increases, a correspondingly smaller volume of citrus will be left for home consumption. The quantity of citrus fruits used commercially for juice purposes or sent to by-products factories may be somewhat reduced because of the greater market demand for fresh fruit in a season of lighter production.

Shipping point prices of Florida grapefruit were maintained on a rather firm basis at $3-$3.50 per box, but quotations on Florida oranges had declined to an average of about $4. Shipments of oranges and grapefruit from Florida had caught up with last season's early record, but California's orange output was only about half as heavy as to early December, 1926. Texas has marketed nearly twice as much grapefruit as was marketed to this time last season, and bids fair to become an important factor in the citrus market before many years have passed.

"Superphosphate" to Replace Acid Phosphate

A CONFERENCE of fertilizer officials, college men, farm paper editors, and state control officials, held not long ago in Louisville, Ky., voted in favor of using the term "superphosphate" instead of "acid phosphate," because of the misleading nature of the latter and because "superphosphate" is the term used in Europe and other parts of the world.

The Association of Official Agricultural Chemists, in convention at Washington on October 31 to November 2, voted in favor of the term "superphosphate (acid phosphate)." The words in parenthesis are used for definition purposes and are to be dropped when the transitional stage is passed. Hereafter, therefore, the term "superphosphate" will designate what we have formerly known as acid phosphate in fertilizer language.

California Growers Study Marketing Problems

(*Continued from page 8*)

remains to be seen what the canning peach industry will do. Growers have been aroused, state executives have pledged co-operation of all state agencies. Speakers at the convention indicated plainly that a definite campaign to organize producers would be launched. One big mass meeting of growers was held the week after the convention to discuss ideas developed on the floor of the convention. Wells A. Sherman, chief of the state division of markets, has taken a lead in the campaign to prevent a price war developing between canners and growers next season. Expansion of markets, discouraging of production on marginal lands and organized commodity minded effort are some of the generalities urged.

Other Branches More Successful

Though California has three branches of its fruit industry in seeming distress, it has others that have weathered the storm very well. The citrus co-operative last year marketed a record crop and is in a prosperous condition. The walnut co-operative has been guiding the walnut industry over the rocks successfully despite tremendous production increases. The biggest problems come in those crops which are highly perishable and which must be rushed 2000 and 3000 miles to the 11 big auction markets of the country or those which have made unprecedented gains in production and must be sold to an organized market, such as canneries.

The clearing house idea is gaining in favor as a means of improving the situation confronting the producers of fresh fruits. The idea returned the fresh grape growers an additional $7,000,000 this past season. Leaders in other fruit lines are now putting greater stress upon the need for a deciduous fruit clearing house and are gaining headway. The greatest problem to overcome lies in the fact that California has some 500 independent shippers. Getting that many shippers to co-operate and join in a united effort to control the movement of tonnage is some job.

Tenny Proposes New Ideas

Lloyd S. Tenny, who came out to California to acquaint the growers with the work and services of the Bureau of Agricultural Economics, in summarizing agricultural conditions in general voiced some of the most optimistic thoughts expressed during the meeting. The high spot of Tenny's formal address was reached when he made the following statements:

"I believe we are at the beginning of an era in American agriculture when the influences affecting the prosperity of agriculture will be more thoroughly understood. I believe we are approaching a time when the effort to produce intelligently in the light of probable demand will be an outstanding feature of our development. I believe the time is not far distant when the distribution of farm products will be effected with greater economy and benefit to producer and consumer. The time is not far distant when a program of production and marketing will be developed for each commodity and made the basis of extension and educational work for both state and federal agencies. We have much still to learn, and it will require courage on the part of all of us to recognize the facts, each contribute his part and speak frankly in order that necessary adjustments may be made to correct evils that impend."

Tenny's idea of regulating production in light of demand is one that has been taken seriously by California vegetable growers. Reports made during the convention indicated that many of the leading producers believe such regulation possible. In connection with the regulation of fruit tonnage, a different problem is presented, however, and organization along commodity lines with control of the tonnage moving to market by the clearing house method were the only outlets suggested.

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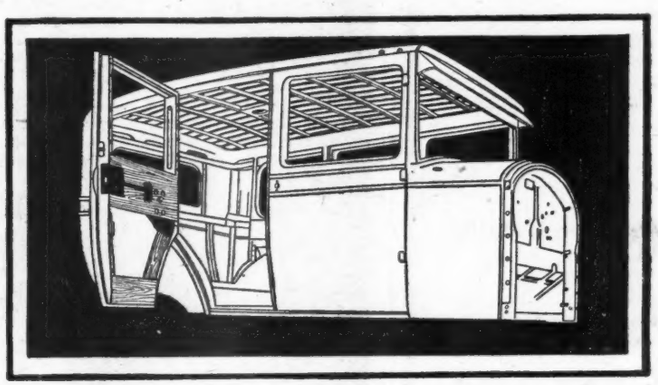

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Body by FISHER

Strict Standardization Emphasized

Needless to say, the need for strict standardization was repeatedly emphasized by speakers. The general expression indicated that California growers are rapidly being made to realize that the best is none too good for consumers. Strict standardization so that friction between producers and shippers, and producers and consumers, can be eliminated was strongly urged.

The convention went a step farther in its consideration of standardization this year than it has in years past. Friction has not infrequently developed over the way fruits and vegetables produced for canning purposes are graded. The state of California by means of state standardization and certification laws is now grading and inspecting grapes and other produce for market shipping, and growers are now contending that the same method is equally applicable to shipments to canneries. As a result of the discussion, the convention passed a resolution recommending the preparation of standardization and certification legislation covering fruits and vegetables used by canners for introduction at the next session of the California legislature.

Many Other Problems Considered

Plant quarantine and pest control occupied a prominent position at one of the sessions of the convention. Rootstock and rose cutting importations from Europe came in for particular condemnation. The convention adopted a resolution urging the Secretary of Agriculture to use every effort to prevent the entry of agricultural pests into the United States and to prevent the further spread of those already here. The resolution set forth the opinion that experience has proved that prevention of entry is much cheaper and of greater advantage to agriculture than control efforts after the pests have become established.

The agricultural labor problem provoked considerable debate during the convention. Southern California citrus and vegetable growers and San Joaquin Valley fruit and cotton growers advanced many arguments in favor of Mexican labor. Agricultural laborers from Mexico are now performing the bulk of the field labor in those big producing areas. The contention was repeatedly made that sufficient white help willing to do the work cannot be secured and that should a quota be placed on Mexican immigration, western agriculture would suffer immediately. The convention adopted a resolution urging sympathetic attention to the needs of agriculture in relation to unskilled agriculture and recommending such steps as will protect agriculture in this regard.

The convention also went on record as endorsing the broad principle of fair and adequate tariff protection for all American grown and American manufactured products for the purpose of maintaining American standards of living at their high level.

He—You should see the altar in our church.

She—Lead me to it!—*Seattle Journal of Commerce.*

KURTZMANN

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THAT co-operative marketing is increasing in the Pacific Northwest is indicated by a survey made by the agricultural department of the Portland Chamber of Commerce. Detailed reports were received from 35 organizations. Two of these were federations of 29 locals.

Thirty of these organizations increased their membership and tonnage during the past year. The increase in membership was 7050, and the increase in business amounted to $8,450,000. There were 92 withdrawals during the year. The age of these 30 organizations varied from two to 19 years.

Four organizations showed a decreased membership and tonnage. The decrease in membership was 22, and the decrease in business was $450,000.

One large co-operative made no report, but its annual business amounts to about $1,500,000 and its membership is about 1000.

Of the organizations reporting, all but 14 were formed with the help of the Portland Chamber of Commerce, and all the others, except two, received indirect assistance. All organizations formed directly through the help of the chamber are operating satisfactorily.

One three-year-old organization increased its membership by 377 and its tonnage by 1000 per cent. One four-year-old organization increased its membership by 155 and its tonnage by 200 per cent. One small organization 18 years old added 120 members and increased its business by 600 per cent. One large organization increased its membership by 1654, and its business increased from 790 tons to 13,000 tons.

THE MUTUAL Orange Distributors of Redlands, Calif., has had the most successful season in its history, according to the annual report of C. P. Earley, general manager. It handled about three and one-half million boxes of fruit. Its shipments of oranges represented about 11.1 per cent of the total California crop. The tonnage of the organization increased 16.75 per cent during the past year. The membership and tonnage have increased steadily since the organization was formed in 1906.

The favorable results for the past season were accomplished in spite of the fact that the largest crop of citrus fruits was produced in California in history and that large crops of other fruits were produced throughout the country. J. A. Steward, sales manager, pointed out in his report that the results were due to damage of the Florida crop by storms and frosts, shortage of home grown fruit in some eastern states, strong demand for orange and lemon juices, and damage to the Spanish crop which opened the way for exports that equaled the aggregate for the previous four seasons.

Officers of some co-operatives apparently believe that their organizations are exempt from the payment of income taxes if they do not conduct over half their business with nonmembers and retain the profits accruing on the non-member business. This is incorrect. If an association acts as a dealer with respect to nonmembers, its operations are taxable on the profits accruing on the nonmember business.

The following paragraph covers this matter in the revenue act of 1926:

"Farmers', fruit growers', or like associations organized and operated on a co-operative basis (a) for the purpose of *marketing the products of members or other producers, and turning back to them the proceeds of sales, less the necessary marketing expenses*, on the basis of either the quantity or the value of the products furnished by them, or (b) for the purpose of purchasing supplies and equipment for the use of members *or other persons and turning over such supplies and equipment to them at actual cost, plus necessary expenses*. . . . .

Some associations credit the nonmember patron with the amount of earnings accruing on his business on a share of stock and in this way qualify for exemption under the revenue act. An association may, of course, apply the earnings accruing on the business of a non-member on the payment of a membership fee and in this way qualify for exemption.

Co-operatives are not required to pay income taxes on refunds or patronage dividends paid to members on account of business done by them with the association. However, the amount paid by an association as dividends on capital stock is taxable, as well as sums carried to reserves.

IN THE YEAR ending May 15, 1927, the Texas Citrus Fruit Growers' Exchange, Mission, Tex., shipped 232 cars of citrus fruit, besides several thousand boxes by express. Organized in 1923 with about 100 stockholders, the exchange took over the only packing house in the valley. It has now handled four crops of fruit. The number of stockholders has increased to nearly 300 and the number of packing houses to three. The quantity of fruit handled through the packing houses is as follows:

Season.	Fruit Handled—Grapefruit. (Boxes.)	All fruit.* (Boxes.)
1923-24	25,493	26,570
1924-25	61,521	65,690
1925-26	28,083	33,640
1926-27	72,007	76,655

*Including grapefruit, oranges, tangerines, lemons, limes, etc.

Fruit is packed on the basis of a guaranteed maximum charge. The first year of operation this charge was set at $1 a box for grapefruit, and at the end of the season the growers received a refund of a little over 10 cents a box. The next year, with a heavier crop, the exchange was able to make a refund of 13 cents. It was then decided to reduce the packing charge to 90 cents, but a freeze resulted in very light shipments of grapefruit and the charge did not quite cover expenses; however, the charge of 90 cents was maintained for that season and for the past season. In spite of the increased cost of about two cents for boxes the past season, the growers received a refund of 4.0546 cents a box, making the average cost of packing for all plants a fraction over 85 cents a box.

On a charge of 25 cents for selling, the exchange lost a little money the first year and made a little the second year. The third year the charge was lowered to 20 cents, the exchange and the members both contributing five cents a box to the advertising fund.

Packing charges collected from growers in 1926-27 amounted to $71,605 and expenses of every kind totalled $68,497, leaving net operating earnings $3108.

Most of the $5278 spent for advertising the past season was used for window displays. Many of the jobbers personally contributed newspaper advertising for TexaSweet fruit. Plans have been developed for stamping the brand TexaSweet on each grapefruit.

While the management is partial to a seasonal pool, the fruit was handled in two pools last year, the first ending on December 1 and the other running to the end of the season. Some growers have suggested three pools for the coming season.

"THE CHIEF advantages of roadside stands to the fruit grower are that they eliminate the middleman and that all transactions are for cash," says Dr. U. P. Hedrick of the Agricultural Experiment Station at Geneva, N. Y. "The roadside stand also offers an opportunity for the sale of a far greater variety of products than would otherwise be possible, such as fruit by-products and perishable goods that could not be shipped to distant markets.

"Success with these stands depends largely upon the attention given to details which make the stand attractive to the passerby and upon the courtesy and energy of the owner. Special containers adapted to the commodities and quantities sold at the roadside should be provided and should be made as attractive as possible. Of course they need not be as strong as containers used for shipping products to distant markets.

"If he is to develop the possibilities of roadside marketing to the fullest extent, the fruit grower must plan to produce a much larger number of varieties than would be the case if he were marketing in commercial lots. These varieties should provide a succession of the different fruits ripening over the entire season and providing high quality and attractiveness in sorts suitable for eating out of hand and for culinary purposes.

"A well-conducted roadside stand should be a source of steady income to the fruit grower with a minimum of overhead expense and without the inconvenience and disappointments incident to dealing with a commission house."

SPECIAL BULLETIN 160 of the Michigan Agricultural Experiment Station, which was written by H. P. Gaston, gives results of a study of the causes of cull fruit in the operations of a representative number of members of the Fennville Fruit Exchange. The study showed that 34.2 per cent of the culls of these members would have been eliminated from the better grades because of lack of size even if they had been entirely free from blemishes. In one season, 51.9 per cent of the B grade fruit was too small for the A grade.

The following percentages give the averages for the best and poorest growers for the four years:

	Grade—Per Cent— A	B	Cull
Best growers	71.0	20.7	8.3
Average growers	56.5	28.1	15.4
Poorest growers	36.0	34.9	29.1

A study of 10 varieties for the four-year period shows that the causes for placing the apples in the cull grade are as follows:

	Per Cent
Lack of size	34.2
Limb rub	27.9
Bruises	15.0
Stings	11.8
Scab	6.8
Worms	5.6
Aphis	4.8
Russet	4.3

BULLETIN 280 of the Maryland Agricultural Experiment Station, College Park, Md., entitled "Roadside Markets in Maryland," emphasizes the following essentials in the operation of a successful roadside market:

1. Possession of a desirable location with adequate driveways and parking facilities to accommodate the public.

2. An adequate volume of business sufficient to justify the devoting of time and effort in operating the stand.

3. An attractive display of products that are sound, of uniform grade and quality, and put up in neat, appropriate-sized containers convenient to handle.

4. Succession of crops coming on the market throughout the season.

5. Good, suitable buildings with efficient help and accommodations for the convenience and pleasure of the customers.
6. Attractive surroundings.
7. Reasonable prices.
8. Neat appearance of operator and good sales ability.

THE CALIFORNIA Prune and Apricot Growers' Association recently addressed a plea to the fruit growers of California to send fruit to their friends as Christmas presents. The idea is a good one and could be practiced to advantage by fruit growers all over the country, not only at Christmas time but at other times of the year. Such a practice would help to lower our surplus production and would help greatly to advertise fruits.

A MARKED increase in British imports of fresh fruit has taken place in recent years. This increase is attributed largely to the advertising campaign conducted during the past few years. This campaign was started in September, 1923, by the Fruit Brokers' Federation, which provided a guaranteed fund of £25,000 ($115,000). The members agreed to charge one-half cent per package on all imports of oranges, apples, pears, grapes, lemons and onions. The second year grapefruit was added to the list. The fruit brokers also agreed to pay a similar amount themselves, thus making a total levy of one cent per package on all imported fruit for advertising purposes. The campaign proved successful the first year and was continued.

A Retailers' Propaganda Association was later organized with a membership of about 15,000. Each member pays $1.80 a year to the Fruit Brokers' Federation for the privilege of displaying "Eat More Fruit" advertising material, which is furnished free of charge. During the season, each retailer receives additional posters for advertising certain fruits in season.

Press material and posters have been used freely in the campaign. Special articles have been furnished for newspapers and medical journals by physicians promoting the use of more fresh fruit. The New Health Society and other health organizations have been of material help. Posters and other propaganda material have been prominently displayed in health offices and in doctors' offices all over the United Kingdom.

THE YAKIMA Fruit Growers' Association, Yakima, Wash., added 252 members and 2473 acres during the past year. About one-third of the new acreage is from the Yakima district. A new plant with the necessary cold storage facilities is needed at that point and may be constructed during 1928.

Two new plants were operated by the association in 1927, and new equipment was installed in other plants. The association established new records in packing when 140,000 boxes were turned out during the week of October 14 and 171,622 boxes or about 200 cars during the week of October 21.

Growing and Marketing Hothouse Grapes in Holland

By George B. Fiske
United States Bureau of Agricultural Economics

MEMBERS of the American Farm Bureau party, while traveling in Holland last summer, were much impressed with the extent of the hothouse grape industry. In the Westland district there were thousands of acres under glass, and grapes were by far the leading crop at the time. The vines were trained up close to the glass, and the bunches were thinned out in rows, the large black grapes and heavy bunches making a very attractive display as the farmers walked through one house after another.

But the selling arrangements were even more novel than the crop itself, and the method of transportation was peculiarly Dutch. Little canals run between the rows of greenhouses. Small canal barges run up the canals and take the grapes at the door of the greenhouse. The fruit is packed in shallow open-top boxes which are placed on top of the deck. The Dutch seem to be an honest people; there is no complaint of fruit being stolen on the way to market. These open deck-loads of fruit, often in groups of half a dozen, are an attractive sight as they move out into the larger canals.

At points on the large canals, there are auction houses for selling the fruit, 18 auctions being located in the Westland district alone. The boatloads sail right into the auction room and stop in front of the seats where the buyers sit to make bids by what is called the electric auction system. The buyer presses a button which records his bid on a dial on the other side of the boat where the auctioneer stands, and the highest bidder gets the deck-load of fruit which then sails on out through the other side of the auction room into the main canal, through which it passes on its way to the city.

Great quantities of these grapes are shipped to English markets, where they were so plentiful in October that even the push-cart men offered them in abundance at about 25 cents a pound, sometimes less. The visitors of the farm bureau party were inclined to suspect that American producers of grapes may be neglecting an opportunity. The hothouse grapes are better looking, cleaner and more attractive than the outdoor product and seem more popular in the markets of Europe.

Boatloads of hothouse grown fruit awaiting their turn to sail into the fruit auction room in the Westland district of Holland

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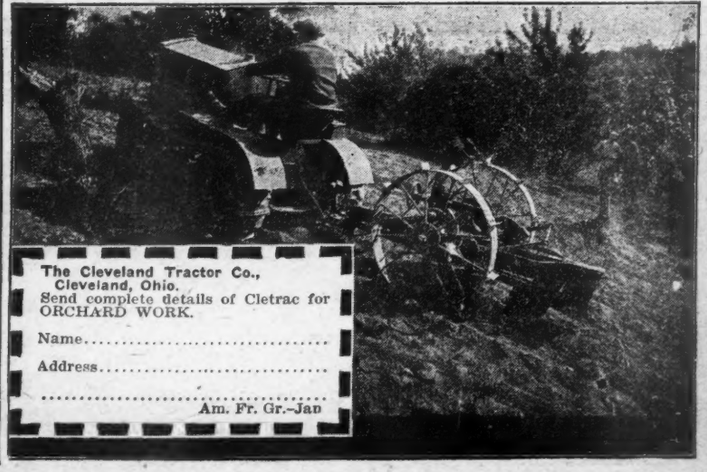

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Book Review

By C. E. Durst

Orcharding

"ORCHARDING" is the title of a new book which will no doubt prove of great value to fruit growers. The authors are V. R. Gardner, F. C. Bradford and H. D. Hooker. Their book on the "Fundamentals of Fruit Production," published in 1922, treated the subject very ably from a more or less technical standpoint. The new book is evidently intended to treat the subject from a thoroughly practical standpoint. The material is presented from a grower's standpoint, and the style of presentation is such that the information can readily be assimilated by practical fruit growers.

The book treats a wide range of subjects, including food and moisture requirements of trees; factors influencing fruitfulness; winter injury; location, sites and soils; propagation; pruning and training; sprays and spraying; and marketing. Numerous questions of a practical nature are covered in the publication. The book may be obtained from the McGraw-Hill Book Company, 370 Seventh Avenue, New York City, or from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $3.

Making Your Own Market

"MAKING Your Own Market" is the title of a small but condensed and interesting book recently published by the Macmillan Company. The authors are Russell Lord and Tom Delohery, associate editors of *Farm and Fireside*. The book consists of a collection of short success stories on marketing collected by the authors in their editorial activities during the past few years. Seventy farmers and farm wives present short stories of their marketing experiences. The book is well worth reading by growers of perishables because of the numerous suggestions contained in it which can be turned to practical advantage. The book can be obtained from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $1.25.

Manual of Cultivated Trees and Shrubs

A COMPLETE handbook of the cultivated woody plants which are grown or can be grown in the cooler temperate regions of North America. It gives in key form complete information on trees, shrubs, woody vines, bamboos, cacti, and other plants. The plants are enumerated in systematic order and classed by families, genera and species, making it easy to run down and identify any tree or shrub. The book contains full descriptions of more than 2500 species distributed among 475 genera of 112 families. There are 930 pages.

Descriptions are followed by short remarks on the ornamental and economic properties of the plants, with occasional cultural hints, and an indication of the approximate hardiness of the varieties.

The author is Alfred Rehder, curator of the herbarium of the Arnold Arboretum.

The book may be obtained from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $10.50.

Root Development of Vegetable Crops

MANY fruit growers raise vegetables as well as fruits. For them the new book on "Root Development of Vegetable Crops" will prove interesting and valuable. The authors are John E. Weaver and William E. Bruner of the University of Nebraska.

The book gives the first detailed account of the root systems of vegetable crops. It presents a detailed account of studies made of all of the important vegetables. Very fine illustrations are presented in each case. The subject matter is well arranged and is presented from a practical viewpoint. The book may be obtained from the McGraw-Hill Book Company, 370 Seventh Avenue, New York City, or from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $4.

Root Development of Field Crops

THE IMPORTANCE of the root systems of plants has long been recognized in practical agriculture, but we have been virtually without definite information as to the nature of the root systems of our important crops. A new book entitled, "Root Development of Field Crops" by John E. Weaver of the University of Nebraska, has just come to our desk. It is a very valuable contribution to agriculture in our opinion. It will no doubt prove helpful to many fruit growers because general farm crops are grown on most fruit farms as well as fruits.

The book describes the root development of field crops and compares the root habits under a wide range of soil and climatic conditions. It discusses the relations of root habits to crop production, the relation of root development to plant disease, the importance of the sub-soil and the influence of irrigation, drainage, fertilizers, transplanting, intertillage, etc., upon root development and crop yields.

The book may be obtained from the McGraw-Hill Book Company, 370 Seventh Avenue, New York City, or from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $3.

Balancing the Farm Output

I HAVE just read a very interesting book. It is entitled, "Balancing the Farm Output," and the author is W. J. Spillman of the Bureau of Agricultural Economics. Mr. Spillman's long experience in the study of economical problems compels one to give consideration to what he says.

The book opens with a review of the surplus production question. Mr. Spillman shows that the surplus acreage of the five major crops—corn, oats, hay, wheat and cotton—amount to about 39,000,000 acres. He agrees with the advocates of farm relief legislation that this surplus compels American farmers to sell their entire crop at world market prices, while they must buy most of their supplies in a tariff-protected market. If the surplus question can be properly handled, according to Spillman, a better situation can be brought about for American agriculture, both for its own benefit and for the benefit of the country in general.

The author agrees with the advocates of farm relief legislation in regard to the tariff. He believes also that our taxation system loads an undue share of the burden on the farmer. He takes the view also that special class legislation passed in behalf of other groups has given them advantages over agriculture in the distribution of the national income. He believes it to be the patriotic duty for the country to seriously consider methods of remedying the farmers' needs.

Mr. Spillman differs from many farm relief advocates in regard to the method to be used. He objects to the equalization fee provided by the McNary-Haugen bill. He feels that under this plan better prices would increase production and that this would defeat the purpose of the legislation. He believes that any method to be successful must place a check on possible increased production resulting from higher prices.

To accomplish this purpose, he proposes that the limited debenture plan be used. Although I do not note any specific statement to this effect, I presume he would obtain the money to be paid farmers from tariff receipts collected on other products. Essentially, this is the plan proposed by Dr. Stewart of the University of Illinois, if I understand correctly.

For preventing increased production, Mr. Spillman proposes that a system of organization be developed on a state, county and community basis. Each grower would register at the beginning the number of acres of the product he has grown in recent years. This information, together with the averages that would be available after several years of operation, would provide means for checking accurately on the matter and in developing an efficient system of operation. Each grower would be permitted to grow only the amount he had been growing. In time, provision could be made for increases in population, etc. Products used on the farm or for seed purposes would be exempt from fees. All dealers would be licensed. Spillman proposes a method of operation, which appears to be fairly simple, by which farmers would receive the amount of the tariff on the part of their production used in this country. This method would accomplish the same result as the McNary-Haugen plan and would at the same time, according to Mr. Spillman, prevent increased production from defeating the purpose of the legislation.

Copies of the book may be obtained from the Orange Judd Company of New York, or from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $1.25.

The New South and Old Mexico

"THE NEW SOUTH and Old Mexico" is the title of a new book written and published by James T. Nichols, one of the agricultural editors who made the trip through Mexico early last spring. Mr. Nichols has made many trips to foreign lands and has written a number of books on his travels, so his new book on Mexico is not his first experience along that line. The book describes the visit in order as each place is visited, and the author makes comments and draws conclusions as he proceeds. An article on "Mexico—Country of Contrasts" by John Francis Case, editor of the *Missouri Ruralist*, is included as the final chapter. The book may be purchased from the Nichols Book and Travel Company, University Place Station, Des Moines, Iowa, or through the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago.

The Book of Bulbs

"THE BOOK of Bulbs" by F. F. Rockwell will prove a worthy addition to the library of persons interested in bulbs. It gives valuable information both from a home garden and a commercial standpoint. The material is presented in a thoroughly practical style. Information pertaining to the selection and planting of bulbs, care during growth, propagation, and storage of bulbs of all kinds is presented. The book is published by the Macmillan Company and may be obtained from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $3.

Gladiolus

"GLADIOLUS" is the title of a compact and useful book that has just been published by the Macmillan Company. The author is F. F. Rockwell. The subject is presented from both a home garden and a market standpoint. Information is given on how and where to use gladioli, varieties and types, culture, propagation, creation of new varieties, harvesting, storing and exhibition. The author is a practical grower of gladioli and thus speaks with authority. The book may be obtained from the AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Boulevard, Chicago, for $1.

Cherry Trees on Mazzard Roots Best

AFTER 14 years of study, the experts of the experiment station at Geneva, N. Y., have concluded that cherry trees on Mazzard roots are superior to those on Mahaleb roots. The results are summarized in a bulletin of the station, which can be obtained on request.

Most cherries are grown on Mazzard or Mahaleb rootstocks, chiefly the latter, according to the station specialists. Mahaleb stocks are preferred by nurserymen because trees on them start more quickly and produce a young orchard of better appearance than trees propagated on Mazzard roots. However, as the trees become older, those grown on Mazzard roots prove superior.

In the experiments conducted by the station, 40 varieties of sweet, sour and Duke cherries were grown side by side on Mazzard and Mahaleb rootstocks. At the present time, the trees on Mazzard roots are far superior. Nearly all of them are alive and vigorous, while less than half of those grown on Mahaleb roots are living and most of these are weak and undersized.

Most varieties used in the tests bloom earlier on Mahaleb than on Mazzard roots but they do not mature their fruit any earlier. The size of the fruit seems to be about the same on both stocks. However, the size and vigor of the trees are increased by propagating the trees on Mazzard roots, and the larger trees usually produce the most fruit.

Fig Growing in Van Zandt County, Texas

By W. H. Neill

MANY PEOPLE believe that figs can be grown successfully only in the coast country around Houston. This fruit, however, can be grown successfully in Van Zandt county, as has abundantly been proved when the crop has been given good care. The Texas Wonder is most generally grown around Edgewood, but a few Magnolias are grown in other parts of the county. A number of our people are growing only a few trees for home needs, and as yet there are only two or three orchards in the county that can be considered of commercial size.

Our own orchard of about three acres of the Texas Wonder variety, located near Edgewood, is worth as much to us as any 20 acres in cotton anywhere, in our opinion. Besides furnishing us plenty of fresh fruit from July to November and providing us with delicious preserves and dried figs, the remainder of the fruit from this little orchard brings us in a reasonable income.

W. H. Neill in his fig orchard at Edgewood, Texas

The Texas Wonder fig usually begins to set fruit in April or May, and the figs begin to ripen in July and continue to ripen until frost under normal conditions.

For shipping purposes, the fruit is hand gathered and sorted, then packed in four-basket crates or common tomato crates. We use these fairly small containers so that the figs will not be bulked enough to become heated in transit.

Hardiness and Quality Sought in Apples

TO DEVELOP varieties of apples having the hardiness of the Duchess, Hibernal and Charlamoff, and the high quality and palatability of Delicious and McIntosh—apples that will supplement the Folwell and Haralson, which were originated at the fruit breeding farm of the University of Minnesota—is the ambition of the horticulturists of that institution.

Of a block of about 7000 seedlings growing on the fruit breeding farm, about five per cent bore apples which this fall were numbered and placed in common storage at University Farm, St. Paul. During the winter they will be taken out five times for close examination by the horticulturists. Eventually all but five or six per cent of the selected seedling apples placed in storage at the farm will be discarded. No apple is recommended and given a name that has not passed rigid tests over a period of five to 10 years. The most promising varieties are repeatedly tested in storage, for it is known that apples vary in color and quality according to the season.

Recently the new crop of seedlings was taken from storage for the first test by Prof. W. H. Alderman and members of his staff. Slices of 400 varieties were tasted by the university men and a verdict given as to flavor, texture, hardiness, attractiveness and type. Some of the most promising kinds were compared with McIntosh, Wealthy and other standard varieties, a small supply of which was on hand for the purpose.

Over at the fruit farm, 10,000 more seedlings, the parentage of which is known to the university horticulturists, will soon come into bearing. Crosses have been made between hardy and high quality parent stock and high hopes are entertained that something outstanding will be developed from them.

The university men will be satisfied if after the lapse of many years they are able to produce a variety having a high average of the qualities which, combined, make a good apple. They hope to extend the range of apple growing in Minnesota, just as the corn area has advanced northward, and they hope, too, to develop a long-keeping apple that will mature in the short seasons of northern climates.

Justin L. Hartwell

JUSTIN L. HARTWELL, well-known nurseryman and horticulturist, died at his home in Dixon, Ill., Sunday, November 20, in his eightieth year.

For many years Mr. Hartwell was an active and prominent member of the Horticultural Society of Northern Illinois and served as secretary and president for several terms.

The 1927 Blue Book of Southern Progress, published by the Manufacturers' Record, Baltimore, Md., gives a great deal of valuable statistics and information pertaining to the agriculture and industry of southern states.

Fruit Tree Diseases
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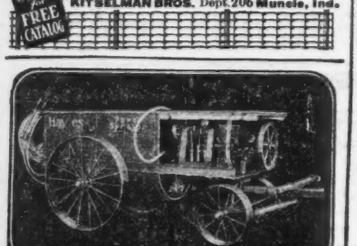

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Pruning Peaches in the Middle West

(*Continued from page 7*)

Close Planting

Peach trees that are planted closer than 25 feet each way and are well cared for, will soon get too large for their space. It becomes necessary to cut back quite severely the spreading side limbs in order to get through to spray and harvest the crop. This cutting of the side limbs makes it necessary to come down on the more upright limbs to maintain the proper balance. When it becomes necessary to restrict peach trees to a much smaller space, that is where your pruning troubles begin on older trees. The labor and expense greatly increase. The side limbs become weaker and finally die. The growth must go somewhere, and so it goes up. Rather severe cutting back and thinning out are resorted to. This may again aggravate the strong upward growth in the tops, and so the fight goes on.

With good normal to heavy crops every year, it would be easy to hold the growth down.

With the trees planted 28 to 30 feet apart each way, the pruning problem would be much simpler and less expensive. Light tipping back and moderate thinning out would produce very spreading trees that would not be too high.

Answers to Practical Questions

The foregoing discussion relates chiefly to general principles. No doubt many practical questions will arise in the minds of readers as they study these principles. I have tried to anticipate some of these and have prepared the following questions and answers, which I hope will be helpful:

1. *How should nursery trees be pruned?*

Small to medium trees should be cut back to 18 to 20 inches in height. The small side twigs should be cut within an inch or two of the trunk. If strong growths can be secured from these little stubs, it gives greater angle to the framework branch. Limbs coming out from dormant buds are apt to have too sharp angles with the trunk.

2. *Should scaffold limbs be selected early in the first season's growth or the following spring?*

I much prefer to select three scaffold limbs as soon as the growth gets from six to eight inches in length rather than wait till the following spring. If possible, select equally strong, well-balanced growths with good angle and spaced four to eight inches up and down the trunk. I usually clip back the other strong competing shoots instead of cutting them clear off. These clipped growths then continue to contribute to the growth of the tree but do not come into competition with the scaffold limbs. This method reduces only slightly if at all the total growth of the tree the first season and at the same time it greatly lessens the next winter's pruning.

3. *When trees have made a very strong growth the first season of from three to five feet, should they be cut back to the usually recommended 18 to 20 inches?*

I do not think they should. Very light cutting back or even tipping is far better. On the stronger growths that are not removed, I might come back to the second or third outward growing twig, but usually I tip back only to the first or second. This is sufficient to check the rapid upward growth somewhat, and at the same time it strengthens the small growths all down the limb. One or two of the strongest of these side limbs on each of the three scaffolds may be selected for additional scaffold limbs. Cutting back the three scaffold limbs to within 18 to 20 inches of the trunk usually results in several strong, upright, succulent growths made at the expense of side growths lower down. The tree is really made taller and less spreading.

4. *Is it ever wise or necessary to cut back severely trees up to six or seven years old?*

I do not think that it is. Light annual cutting slows down the upward growth sufficiently so that trees making a good normal annual growth will not be too tall. Even if you want to lower them, it is much better to cut back moderately to a good side limb usually running outward. Heavy cutting back of trees in good vigor, whether young or old, always results in increasing the height rather than in lowering them. Of course, trees in low vigor due to lack of fertility and cultivation may not be affected much by even severe cutting back.

5. *To maintain the vigor of the growth and of the trees, should we depend mainly on pruning or fertilizing?*

I think that it should be mainly on fertilizing supplemented by cultivation. There is no mysterious magic in pruning to make trees grow. On the contrary, pruning old or young trees is a more or less dwarfing process and really does not add to the vigor of the tree as a whole. Pruning may add greatly to the vigor of the individual twigs by reducing the number of growing points. But it is better and cheaper to secure the desired growth mainly with fertility and prune principally to keep the trees within bounds and to let in the desired amount of light.

6. *What is to be done with old trees that fully occupy their space when pruning to let in light produces too much growth?*

Lighten the pruning a little and prune in such a way as to let in the maximum amount of light with the minimum amount of pruning. Cut off the application of nitrate until the trees show signs of needing it. It may also be necessary to lighten up on cultivation. On the off or light crop years, it is quite easily possible to get too much growth, due to the combined effect of too heavy pruning and too much nitrate coupled with good cultivation and plenty of rain. The fruit lacks color and carrying quality. A good moderate growth is the best peach fruiting wood.

7. *Can we maintain our orchards with the commercial nitrate?*

I do not know, but I think we can. However, I think an application of five or six tons per acre of good stable manure applied every three or four years and proportionally less nitrate will give the largest and best quality production of fruit.

Nitrate alone with a cover crop late in the season will bring very good results. The natural grass and weeds will help wonderfully, but a legume cover is better if a good growth can be secured. I like very much a combination of cowpeas and oats sown at the last cultivation before harvest. Under ordinary peach orchard conditions in our older orchards and in our rather dry seasons, it is a question whether it will pay to go to the expense of sowing a legume.

8. *How far apart should peaches be planted?*

Trees that are to have extra good care should be planted not less than 28 to 30 feet each way. Planted on rather poor land and with poor to medium care, 20 by 20 would do very well but 25 by 25 would be much better. Unless a peach tree makes a good annual growth, the wood soon becomes weak and dotty and breaks badly under a load of fruit. Making this good annual growth even when restricted somewhat with proper pruning, the trees soon get too big for the space unless planted far apart. With wide planting, the labor and expense for pruning would be reduced to the minimum, and after the trees had been planted for six years the yield per acre would probably be as great as or greater than in the more closely planted orchard. The trees will spread naturally and very little pruning will be required to keep them from getting too high.

9. *Can we get along without pruning?*

I do not think it will pay to do so. If trees are kept in such poor growth and vigor that they need no pruning, the yield of fruit will soon reach close to the vanishing point, and the trees will soon pass out. We lose a good many crops due to frosts and freezes, therefore it behooves us to keep our trees in good vigor so that they can and will bear a good crop when conditions are right.

10. *Can we do part of the thinning job by pruning?*

I believe that we can do so, but I also believe that it will not pay to do it. If we prune to the point where little or no thinning is necessary, the yield is apt to be greatly reduced. Heavy pruning may cause a larger proportion of the buds to set on the fewer twigs, thus making thinning all the more necessary.

Moderately pruned trees with a liberal amount of small bearing wood may not set and retain any more peaches than the heavily pruned tree with half the bearing twigs. The latter may need thinning worse because the peaches are clustered more.

A. P. S. and Kentucky Society Meet at Louisville

(*Continued from page 5*)

riculture, the Brown Hotel and the press of Louisville for their co-operation and services. Congress was urged to pass such enabling legislation as would bring about the necessary economic readjustments and encourage the development of improved marketing methods to the end that fruit growers may receive a more just and equitable share of the national income. A tariff on bananas was urged, and a committee was appointed to cooperate with other committees to achieve this end. The campaign for advertising apples and the Apples for Health movement were again endorsed.

Election of Officers and Executives

The American Pomological Society elected the following officers and executive committee members: president, Ralph W. Rees, Rochester, N. Y.; first vice-president, J. C. Blair, Urbana, Ill.; second vice-president, W. T. Macoun, Ottawa, Canada; and secretary-treasurer, H. C. C. Miles, Milford, Conn. Executive committee: C. A. Bingham, Cleveland, Ohio; W. S. Perrine, Centralia, Ill.; C. W. Clausen, Wenatchee, Wash.; Carl Buskirk, Paw Paw, Mich.; H. D. Simpson, Vincennes, Ind.; H. B. Tukey, Geneva, N. Y.; A. J. Farley, New Brunswick, N. J.; C. D. Matthews, Raleigh, N. C.; R. A. Van Meter, Amherst, Mass.; F. A. Motz, Blacksburg, Va.; N. D. Peacock, Knoxville, Tenn.; and W. H. Alderman, St. Paul, Minn.

The Kentucky State Horticultural Society elected the following officers: president, W. H. Stites, Henderson; vice-presidents, Dr. H. Van Antwerp, Farmers; Charles Rottering, Paducah, and W. W. Hillenmeyer, Lexington; and secretary, Ben E. Niles, Henderson.

Handling the Golden Delicious in Common Storage

By Monroe McCown
Indiana Horticultural Society

THE OPINION prevails that Golden Delicious cannot be kept satisfactorily in a common or air-cooled storage. For this reason, it is interesting to note that Frank Street, a successful fruit grower of Henderson, Ky., prefers common to cold storage for this variety.

Mr. Street makes a practice of sprinkling the ricks of crates whenever there is the least sign of shriveling. He has found that when so handled, Golden Delicious apples not only come out of storage plump and crisp, but develop a better finish than when kept in the average cold storage.

Other Midwest growers have had poor results with the Golden Delicious in common storage As a rule, the main trouble has been shriveling due to failure to maintain the necessary humidity in the storage.

An Orchard Heating Experience in Indiana

(*Continued from page 5*)

perature in the coldest part of the orchard fell only to 26 degrees, and under those conditions 35 heaters per acre only were necessary even in the coldest part of the orchard to hold the temperature well above the danger point.

Summarizing their experience, Mr. Schultze stated that under these conditions 70 heaters per acre gave entire protection but that no less a number could be depended upon to give these results with the temperature encountered the first night. Almost complete protection was secured in the coldest part of the orchard with 70 heaters per acre, but with 52 in the warmer sections and 30 on the highest ground, perfect protection was not secured but a large number of the buds were saved.

However, with the more moderate drop in temperature that was experienced the second night, 35 heaters per acre gave adequate protection.

How Heaters Are Placed

The heaters are placed in the tree rows. Where 35 are used to the acre, they are placed in the north and south rows, and where 70 are used, they are placed also between the trees in the east and west rows, thus providing a heater on four sides of each tree.

A section of sod about three feet square is removed from the ground where the heater is to stand to prevent danger of fire, as the orchard is in sod and straw mulch.

Piles of coke are distributed through the orchard and held in readiness for servicing the heaters when necessary. The heater may be charged with wood and coke and left in the orchard until needed. A wooden plug is inserted in the large hole just above the oil well. This, together with the construction of the heater, insures a dry charge of fuel even in rainy weather.

When it becomes necessary to fire the heater, the wooden plug is removed, and the oil holder is filled with oil and ignited. This is accomplished in one operation. A long spouted oil can or torch, similar to that used by railroad engineers, is filled with a mixture of one-third gasoline and two-thirds kerosene. A cotton rope extending down through the spout serves as a wick, and is knotted on both ends to hold it in place. This rope is about an inch longer than the spout and free to move about that distance. The rope wick is ignited at the outer knot, and in filling the oil cups it is only necessary to place the spout through the opening above the oil holder and invert the can until a little oil has run in. The spout is then removed, and the oil is left burning, being ignited from the lighted wick. In this manner the heaters can be lighted very rapidly. The burning oil ignites the wood which in turn fires the coke. Heat is generated very rapidly and in 30 minutes the heater is burning at its maximum capacity.

The crop upon the sections of the orchard where heaters were used was much more satisfactory than in any of the unheated sections. This, of course, is the real indication of what was accomplished, and in terms of increased yield the results were very gratifying.

National Fruit Show Is Great Success

(*Continued from page 7*)

—George A. Hawkins, Cedaredge, Colo.; Delicious and York Imperial—Joy Morton Orchard Company, Mitchellville, Ia.; Jonathan—E. O. Worth, Mondamin, Ia.; Stayman—Star and Williams Brothers, Cedaredge, Colo.; Winesap—Bryon Elder, Austin, Colo.; and any other variety—Franklin Fruit Farm, Falls City, Nebr.

We regret that space prevents us from giving the names of the winners in the plate exhibits.

Winners of Trophy Cups

The trophy cup offered by the International Apple Shippers' Association to the exhibitor winning the greatest amount of cash premiums on apples was awarded to the Apple Grove Orchard Company, Mitchellville, Ia. (R. M. Clark, manager.)

The order of the state exhibits, which were large affairs and which were arranged in various beautiful designs, were as follows: Kansas, Nebraska, Missouri, Iowa and New Mexico.

The A. I. Root Company trophy cup was won by J. L. Robinson of Smithville, Mo., for having won four first prizes, three second prizes and two third prizes.

Show Receives Scant Publicity

The show and meeting were fairly well attended, although a show of this nature should attract more growers than it did. In addition, thousands of Kansas City people should have visited it. This lack of interest by the public in such an important event is no doubt largely accounted for by the scant attention which the Kansas City papers gave the affair. Just how or why the papers neglected this show to the extent they did, it is difficult to understand. Certainly, Kansas City people are enough like the rest of us that they would have been interested in stories of this show if they were properly prepared. Doubtless, also, hundreds of them would have gladly attended if they had known of the character of the show. Let California or the Pacific Northwest have such a show and the whole country would know about it instantly. The Kansas City papers certainly missed an opportunity for advertising their section. We doubt if any papers in any important eastern city would have fallen down in their duty to the community in this matter to the extent that the Kansas City papers did.

NATIONAL wealth of the United States has mounted to 355 billion dollars, the National Industrial Conference Board estimates. This amount, which is equivalent to $3000 for every man, woman and child in the country, represents an increase of 90.7 per cent since 1912.

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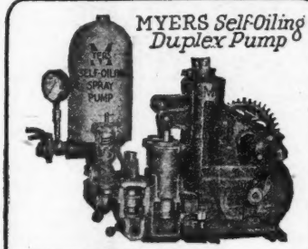
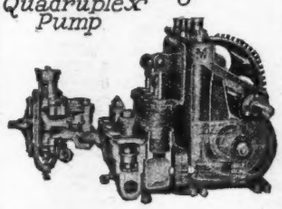


MYERS *Self-Oiling Quadruplex Pump*



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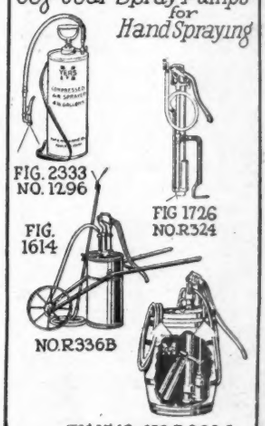

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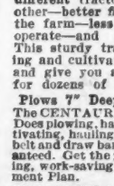

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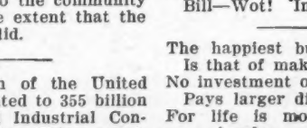


He Didn't Believe It

"I certainly was outspoken at the meeting of the Woman's Club today," remarked Mrs. Gabber.

"Impossible!" exclaimed her husband. "Who outspoke you?"

Too Much

Foreman—Wot's up Bill, 'urt yourself?

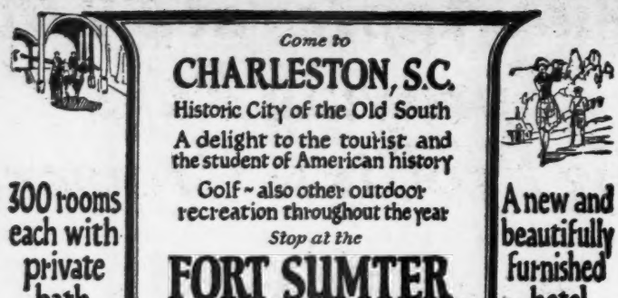
Bill—No; gotta nail in me boot.

Foreman—Why don't you take it out, then?

Bill—Wot! 'In me dinner hour?

The happiest business in the world
Is that of making friends.
No investment on "the street"
Pays larger dividends;
For life is more than stocks and bonds,
And love than rate per cent;
And he who gives in friendship's name
Shall reap as he has spent.

—*Selected.*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Special! Watch Chain Free
For a limited time we are offering an exquisite watch chain FREE. Write at once—while this offer lasts.
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WATCHES : DIAMONDS : JEWELRY
Dept. E213 South Bend, Indiana

New Dewberry Recommended for Trial

A HYBRID DEWBERRY, all but lost to the horticultural world since its origin in 1905, has been brought into favorable recognition as a result of tests by the United States Department of Agriculture. This dewberry, named the "Young" for the originator, B. M. Young, of Louisiana, bears fruit larger than the popular Lucretia variety, is much sweeter than the Logan, and of an exceptionally high dessert quality. The berry is an attractive deep wine color.

The Young dewberry, according to George M. Darrow, who made the tests for the department, has been found resistant to anthracnose disease and free from the ordinary leaf spot wherever tested. It has been grown at a number of experiment stations and by other co-operators, and no undesirable features have developed. It has been found especially suitable for culture in the southern and southeastern states and is recommended for trial by gardeners and truck growers in these sections as well as in other localities where dewberries are ordinarily grown.

This dewberry first came to the attention of the department in 1921 when some plants were sent to it by a Pennsylvania nurseryman who requested they be tested. At the first fruiting, three years later, these plants attracted immediate attention because of the exceptional qualities of both the fruit and the plant. Mr. Darrow then traced the history of the variety and found that the Pennsylvania nurseryman, who had since died, secured his stock from the originator in Louisiana. It developed that Mr. Young had produced the seedling by crossing the Mayes dewberry with the Phenomenal blackberry in an effort to develop a berry similar to the Logan of California. He gave some of the stock to the nurseryman, but discarded the hybrid himself because of other interests. Its unusual and desirable characteristics were thus finally recognized after systematic testing under varied conditions.

The department has no plants of this variety for distribution, but it is obtainable from a number of southern nurseries.

A Laugh

A laugh is just like music;
It freshens all the day.
It tips the peaks of life with light,
And drives the clouds away;
The soul grows glad that hears it,
And feels its courage strong—
A laugh is just like sunshine
For cheering folks along.
—*Boys' World.*

Reporter—It is said that yourself and your comrade, Mooney, were calm and collected after your accident at the railroad crossing.

O'Toole—Well, it was loike this: Oi was calm and Mooney was collected.

Pruning Apple and Pear Trees

(*Continued from page 3*)

On certain varieties like Ben Davis and Gano, which are susceptible to blister canker, it is always unwise to remove large healthy limbs. This disease is apt to obtain a foothold in the wound before healing over is accomplished. The removal of large limbs will also frequently subject the limbs and main trunk to sun scald injury through lack of shade. When in doubt regarding the removal of a limb or branch, it is a safe plan to leave it. It may be removed at some future time, but it cannot be replaced once it has been cut off. When a large limb seems to be in the way, several branches may be cut off without danger from large wounds. It is usually well in neglected orchards to extend the pruning over a period of at least four or five years, taking out a few small branches each year. At the end of this period the trees should be in a condition to bear a heavy crop of fruit possessing high color and normal development due to the proper amount of sunlight admitted. This plan avoids throwing the trees into excessive water sprout growth and, in extreme cases, out of fruitfulness by too heavy pruning in any one year.

"Pruning-Up" Apple Trees

"Pruning-up" apple trees is literally put into practice in many instances. The grower sometimes stands on the ground and prunes away every fruit spur and branch within reach of his pruning saw and shears. The very fruit which would have been most profitable to pick and spray is eliminated. Long, bare limbs with a tuft of small branches near the end resembling a feather duster are the result. The bearing surface is confined to the outer edge or surface of the branches, not only reducing the bearing area but making spraying and picking more difficult and expensive.

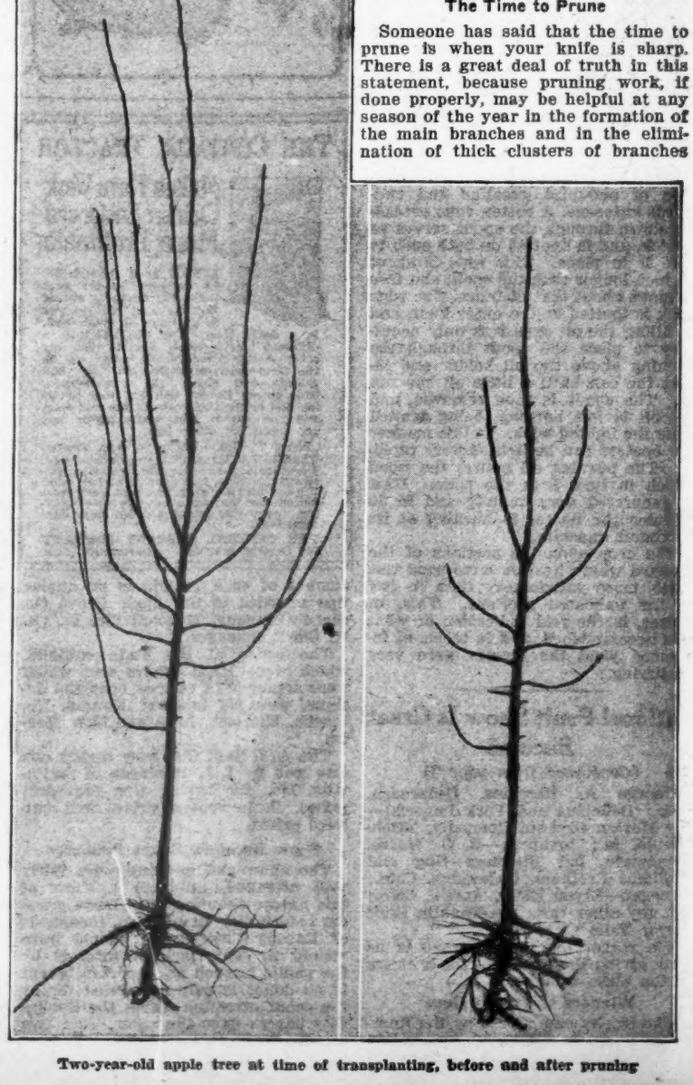
Summer Pruning

Summer pruning is not usually practiced in Missouri. Light pruning before the trees come into bearing is important, however, in the young orchard. If the grower has time, he may thin out the thick growth in the young tree tops, cut back vigorous branches and remove sprouts to secure the proper spacing between the main branches and develop a more symmetrical tree top. If water sprouts are rubbed off the trunk and removed from the base of the trunks, the trees will be benefited.

In bearing orchards growers can do very worth while work in May and June in the way of thinning out small branches and at the same time thinning the fruit. As with dormant pruning, if good judgment is used, the pruning work will consist largely of thinning out small and crossed branches to admit sunlight and to prevent shading of fruit spurs. Such treatment will cause no injury and will be of value if no large amount of wood is cut off during the summer. Summer pruning should be of a corrective nature, and the main pruning work done during the dormant season.

The Time to Prune

Someone has said that the time to prune is when your knife is sharp. There is a great deal of truth in this statement, because pruning work, if done properly, may be helpful at any season of the year in the formation of the main branches and in the elimination of thick clusters of branches



Two-year-old apple tree at time of transplanting, before and after pruning

which cause excessive shading of fruit spurs. Pruning at any season may also be helpful through the removal of dead and badly diseased limbs and broken branches.

In general, however, it may be said that the principal work should be done some time after the leaves drop in the fall and before they appear in the spring. Any time during this dormant season when men may work comfortably out of doors, the pruning work may be carried on with profit. With large orchards, one of the main problems confronting the grower is the matter of securing labor for the pruning work. The question is not, therefore, so much a problem of when it should be done as it is a matter of getting the pruning done. It is true, however, that labor may usually be secured with less difficulty during the fall and winter than during the early spring just as growth is starting.

The Treatment of Pruning Wounds

In pruning young orchards, it is seldom necessary to use a disinfectant to sterilize the small wounds made by the removal of branches. It is also true that there is much less disease in the young orchard than in the old. There is less opportunity, therefore, for spreading disease as a result of pruning work.

In bearing and neglected orchards where the presence of fire blight or blister canker is suspected, it is advisable to disinfect and paint all wounds two inches or more in diameter. Several disinfectants may be used for this purpose, the most important of which are: mercuric cyanide and corrosive sublimate, one part of each to 500 parts of water; and copper sulphate (blue stone) dissolved in water at the rate of one pound to five gallons of water, and this is one of the cheapest and most effective disinfectants. These disinfectants may be applied by means of a sponge or several thicknesses of soft cloth tied around a stick about 12 inches long. After each wound has been thoroughly moistened with the disinfectant and allowed to dry, it should be painted with ordinary house or barn paint, which consists of white lead and raw (never boiled) linseed oil. Several commercial preparations are now on the market for painting pruning wounds. Many of these paints are also satisfactory disinfectants and may be used according to directions.

Some authorities advise against the use of paints to cover pruning wounds because it is claimed that wounds heal more readily when not painted. The observations and experiments at the Missouri station show that there is little difference in the rapidity of the healing of pruning wounds when painted with white lead and raw linseed oil and when no paint is used. Moreover, cracking of the wounded surface is largely prevented by painting, and thus fungous diseases cannot so readily gain access to the wounded portion. To keep the large wounds covered, it may be necessary to repaint at least once each year until the wounds have completely healed over.

Pruning Tools

If pruning work is to be performed properly, interestingly, and with the least amount of effort to the laborer, good pruning tools are necessary. It is no more possible for the pruner to do good work with poor and inadequate pruning tools than it is for the carpenter to do good work with tools which are unsuited to the task.

The two most important pruning tools are the swivel pruning saw and the pruning shears. With these two implements the grower may handle the pruning work efficiently in a young orchard until it comes into bearing. After the trees reach the bearing age and there is occasion to do more and heavier pruning work, other pruning tools will facilitate the task. A larger pruning saw, a pair of long-handled shears or loppers and other implements may be needed and used effectively and economically. It is just as important to keep the tools in first-class condition for work as it is to have a complete and satisfactory outfit.

Method of Removing Branches

In the removal of large limbs or small branches, it is a good rule always to make close, clean, smooth cuts. This is important, although more time may be required for the work. By "close" is meant that the cut should be made close to the point from which the branch arises. It is never well to leave stubs because they do not heal over readily, and there is an opportunity for fungous diseases to get a start. Pruning wounds should also be made at an angle corresponding to that of the branch from which it arises.

When it becomes necessary to remove large limbs from five to eight inches or more in diameter, a cut should be made on the lower side at a distance of 10 to 12 inches from the limb or trunk of the tree and the limb sawed off from above. By this means, splitting down will be prevented. When the large limb has been removed in this manner, a second cut is necessary in order to make the wound close to the trunk or branch and corresponding to the angle of the same.

Pruning Pear Trees

The pruning of pear trees does not differ widely from the pruning of apple trees. In fact, the main principles observed in pruning young apple trees, bearing apple trees and neglected apple trees may be applied to pear trees.

The pear trees, however, usually have a more upright habit of growth than most varieties of apple trees. As a consequence, they have less spreading tops. On account of this fact, it is usually necessary to develop a spreading top by the thinning out of branches in the center and by cutting back the branches more severely than in the case of apple trees. However, as in the case of apples, pruning that is too severe usually delays the time of bearing, increases the water sprout growth and has a dwarfing effect on the trees. The increase in vegetative growth may cause the trees receiving heavy pruning to blight worse than those that are moderately pruned. One of the methods of controlling fire blight on badly affected trees is to do less pruning and reduce the amount of succulent or tender growth. Dead and badly diseased limbs should always be removed. Some varieties of pears and apples may be unusually susceptible to fire blight. Where this is true, the diseased wood and cankered areas on the limbs and trunk should be removed during each dormant season. If this clean-up work is done each year, the source of infection of fire blight will be largely eliminated. With apples and pears which are susceptible to fire blight, it is best to have as many scaffold limbs as possible, so that if one becomes girdled near its base by a fire blight canker, it may be removed without the loss of too much of the bearing surface of the tree.

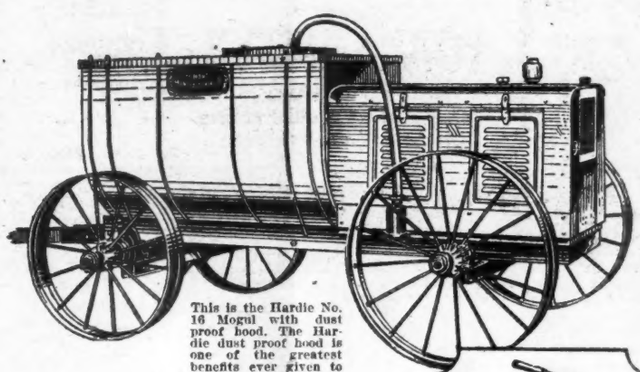
Imported Peach Proving Hardy in New Jersey

A NEW PEACH obtained from the mountainous sections of central Asia is proving the most hardy variety in flower at the New Jersey Experiment Station. The variety blooms about 10 days earlier than standard commercial varieties, and yet it has never failed to produce some fruit each year at New Brunswick.

The variety blooms so early that its flowers are exposed almost every year to a temperature of 26 degrees Fahrenheit. Such conditions were experienced in 1926, and yet the variety set a heavy crop. During the present season, the first bloom appeared on March 27, and the trees were in full bloom April 8. The Elberta did not attain first bloom until April 19, or 23 days later. Prof. M. A. Blake has named the variety the Polar Bear peach.

City Chap—I say, is that bull safe?
Farmer—Wal, he's a dang sight safer than you are, right now.

With Apples at $8.00 Spraying Pays Big Profits to Growers



This is the Hardie No. 16 Mogul with dust proof hood. The Hardie dust proof hood is one of the greatest benefits ever given to growers working in sandy, dusty soil.

THE orchardist who is making the most profit out of prevailing high prices is the one who sprayed his trees often and thoroughly *at a reasonable cost*—in other words, the one who used Hardie equipment.

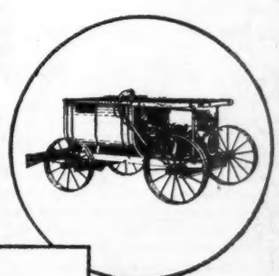
Hardie Sprayers are protecting the fruit growers' profit in every type of orchard on this continent—on the steep hillsides of Northern Georgia, in the Shenandoah Valley, in the Ozarks, in the irrigated lands of Washington and Oregon, in the citrus groves, and among the towering walnut trees of California, in Florida, and in thousands of fruit-growing sections scattered across the country from New England to the Golden Gate.

For over 28 years Hardie equipment has been known for high pressure, light weight, large capacity, perfect agitation, and simple, trouble-free construction. The power plant in any Hardie always provides a great safety factor in surplus capacity. Engine failure never stops the man who sprays with a Hardie.

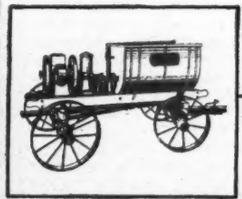
Hardie hand and power sprayers are known and respected wherever orchard crops are grown. Every part of every Hardie is the best that money, brains and experience can produce. A Hardie enables you to get the highest obtainable percentage of perfect fruit with the greatest ease and lowest cost.

There is a Hardie for your particular need. Get the Hardie 1928 catalog and take advantage of the better spraying methods and equipment which it offers to every grower.

This is the Hardie Barrel Sprayer. Other hand-operated Hardies, on skids, on wheels, in barrow-mounting, and to fit any pail. No need is too small to receive the best spraying outfit that Hardie engineers can design. If you've got only one tree, bush, or potato plant, spray it.



This Hardie No. 12 Mogul fully fills the order from commercial growers for larger capacity, higher pressure, but no more weight. This 200 gallon sprayer does more than any other sprayer of equal weight ever built.



This is the Hardie Junior—the outfit which brought the benefits of power spraying to thousands of small growers who were using hand sprayers because they thought that they could not afford a real power sprayer. Hardie is proud of this sprayer. You can buy it with confidence.

This Hardie Duplex is so designed that a 2 hp. engine will develop the full capacity of the Hardie Vertical Duplex Pump under high pressure. This is a splendid unit for the small acreage grower.

THE HARDIE MANUFACTURING COMPANY
HUDSON, MICHIGAN

Branches at
PORTLAND, OREGON
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HARDIE
DEPENDABLE SPRAYERS

The Orchard Home Department

Begin the Budget Now

JANUARY FIRST is the accepted time for making good resolutions and January second the popular date for breaking them. There is not much use in resolutions if they are just a swift succession of making and breaking. Perhaps, however, it is as well to keep on resolving to do better next time.

We have the testimony of that devout, witty and whimsical Methodist—Corra Harris—that it's all wrong to ridicule the successive conversions of those who "get religion" year after year and require the stimulus of periodic revivals. She herself finds annual revivals and conversions entirely reasonable and helpful.

The object of a budget is, primarily, to hold expenses in check. Secondarily, it should prevent so much being spent in one direction that there's nothing left to cover something else equally important. Lastly, but still of considerable value, it serves to save us from that distracted, baffled, ever-recurrent crisis in which we exclaim, "I can't imagine where the money's gone!"

A budget must admittedly be somewhat elastic. The month when you have to call in a doctor may necessitate your resorting to the unsatisfactory process known as "robbing Peter to pay Paul." If there's an unexpected, unavoidable bill to be paid, there will be less left for the items of advancement and savings, both of them very desirable.

There's such a diversity of needs and tastes that it would be impossible for any form of budget to fit all cases. Why, for instance, set aside a fixed sum for maintaining an automobile if you don't own one? But in a general way, the beginners in budgeting who find themselves at a loss as to where to start, may be helped by an example of how the thing should be done. After trying out certain proportions for a few months, the husband and wife (for this is essentially a co-operative plan) will usually find out where they can pare off a little there and add a little here with increased efficiency and satisfaction.

A sample budget for a family with an income of $100 per month runs something like this:

SAMPLE BUDGET FOR FAMILY WITH INCOME OF $100 PER MONTH.

Number in family.....	3.	4.
Food	$ 25.00	$ 29.00
Shelter	25.00	25.00
Clothing	17.50	17.50
Operating	9.00	9.00
Advancement	12.50	9.50
Savings	11.00	10.00
Total	$100.00	$100.00

Here we see that food, being a prime necessity, calls for additional expenditure for four persons and that this is made good by cutting down on advancement and savings.

With a monthly income of $200 the budget would run like this:

SAMPLE BUDGET FOR FAMILY WITH INCOME OF $200 PER MONTH.

Number in family.....	3.	4.
Food	$ 50.00	$ 53.00
Shelter	50.00	50.00
Clothing	35.00	35.00
Operating	18.00	18.00
Advancement	25.00	19.00
Savings	22.00	20.00
Total	$200.00	$200.00

Under these headings, food may be subdivided into meats, groceries, fruits and vegetables, milk, ice, etc.

Shelter—if the home is owned—includes taxes, insurance, repairs and upkeep of premises.

Clothing may be itemized as man's, woman's and children's.

Operating includes heat, light, telephone, laundry and incidentals.

Advancement is divided into a variety of non-essentials which we couldn't very well live without—education, household improvements, amusements and so forth.

Savings properly include savings accounts, investments and life insurance.

No budget can be expected to render the full service of which it is capable unless expenditures are recorded as made and unless the budget is balanced regularly at least once a month.

Careless of Common Colds

MORE DAYS are lost from business annually on account of colds than because of any other one malady. With information as to the serious menace of widespread colds being constantly broadcast by both the written and the spoken word, many persons still maintain the careless attitude—"Oh! nothing much the matter. Just a cold."

It is little short of amazing what irresponsibility is manifested both by people with colds and by those who expose themselves to infection. Delicate children may be kept out of the sick room once the sufferer is hard and fast in bed. In more serious cases, a doctor and even a trained nurse in addition may be summoned to deal with the illness and to protect other members of the household.

As a rule, the cold is allowed to run its course round the family circle. So long as he can sit up, Father never hesitates to trot the baby on his knee. Mother hangs over all the children and lets them hang about her. No ailing child is kept away from the rest.

Even a degree of isolation would entail extra trouble for the housekeeper. Besides, there's the human tendency to repudiate the idea that oneself can be an undesirable with whom contact should be avoided.

Only yesterday, I heard two young mothers, heads close together, discussing the iniquity of a neighbor who allowed one of her children to go to school while another was breaking out with a rash of unknown nature. A small child sat on the knee of one anxious matron, while a little girl clambered up on the lap of the other and clung with her arms round her mother's neck. This young woman was, as the saying goes, "all stopped up." Her eyes and nose were red and watering. Her throat was continually irritated by a deep, hard cough. They seemed, to say the least, inconsistent in their conception of proper protection for their own children.

Odds and Ends

Few of us keep in later life the charming simplicity and candor of a little child. "Whom do you love, Billy Boy?" I asked a darling three-year-old. "I loves Mama, an' Daddy, an' Sister, an' Auntie, an'" he paused a moment, then added with a shy blush, "I loves *me* too."

* * * * *

The holidays are over now. Are your Christmas decorations still dropping dull and dried leaves over the floors? Nothing is less beautiful or more untidy looking. Save the children from the disillusionment of seeing day after day a stripped and fading tree. Let it remain a radiant recollection.

* * * * *

A Frenchman has introduced raw wheat to society as a panacea for most human ailments. Dwelling upon the high content of the precious and elusive vitamin B in raw wheat, he has successfully launched a fad which has influenced doctors to prescribe for their most fashionable patients one teaspoonful of the raw grain daily, with the admonition to "munch before lunch." Even the smart restaurants and cafes are catering to the growing demand by serving an entree of raw wheat at luncheon.

* * * * *

Carelessness with matches still heads the list of causes of destructive domestic fires.

By Mary Lee Adams

Year 'Round Gardens

THE NEW YEAR is with us. In all save far southern latitudes, snow lies on the ground. Our dear gardens are softly blanketed and the only blooms to be seen are on the potted plants in the window boxes. Yet, being human and consequently contrary, it is when we are shut in that we most wish to look out.

Evergreens and berried shrubs are now the garden lover's chief dependence. If these have not been provided for the delight of the eye, the sole recourse is to gaze on the lovely tracery of bare boughs against the chill blue of a winter sky. This is enchanting but tends somewhat to melancholy.

In Season All the Year

More and more it is realized that the home garden should add its quota of joy to each season. Unless one is excessive in demands and refuses to be content without a grand display of varied blooms, it is not a difficult matter to select material for the garden that will offer, in return for loving care, some sweet reward in every month of the year.

To plot out such a garden on paper would beguile many a pleasant and worth while hour of the few flowerless months still intervening before the first blue bird announces the coming of spring. Only a sketchy outline can be made here as a tentative suggestion of what would give continuous satisfaction for 365 days.

Make Dreams Come True

Perhaps you are standing by the window moping over a desolate, lifeless scene that you might have enlivened. Try to picture yourself this mid-winter day, reveling in the red, white and blue of bright-berried bushes, and in the varied shades of evergreens which run from pure color to distinct suggestions of copper, red and blue. Such a scene will invite cheerily chirping birds, at this season so confiding as they peck at the berries and hungrily seek for crumbs, seed or suet with which you have thoughtfully spread their table in these lean days.

Awaking to the drab reality of dead stalks sticking up forlornly through the snow, you feel the time has come to decide upon what should be done to make the winter garden as interesting and picturesque (though less fragrantly lovely) as in the season of blossoms.

At once you will vision some ivy-draped bird bath, stone post or angle of brick wall. And thick-needled, pointed shrubs which will look equally attractive in the foundation planting knee deep in June as they do knee deep in snow. Is there a chance for you to get some box bushes which will lend the grace of that old world atmosphere so much sought after today? How well all of these things will accord with the glossy brightness of the berries.

When Spring Dances In

Depending upon the locality of your orchard home, there is doubtless some particular flower with which you associate the first breath of spring. The crocus fills this place over a broad area. By all means, let it appear in your own garden.

Close on its lavender, white or yellow heels, there presses the army of gay bulbs whose very names are redolent of warm zephyrs—daffodils, jonquils, narcissi, tulips. They bring a fresh delight unrivaled even by the glorious burst of full summer bloom. This, for all its splendor, cannot come to hearts so recently burdened by the sense of imprisoned nature, that the breaking of every icy bond gives a thrill of keen relief.

I'm for Iris

These charming bulbs are what might be called the curtain raisers for the summer show. Iris for late spring and early summer, are most dependable, satisfactory and vastly rewarding with their lavish display of many tinted beautifully shaped blossoms. Some varieties carry the bloom well on into autumn.

Trying to condense the merest category of the immense variety of iris into space as may be devoted to a single article would be almost like suggesting to an astronomer that he should give an outline of that science, together with the names of the better known stars, on a single leaflet.

If you care to go in for the now very fashionable culture of iris on an extended scale, you may find considerable interest and pleasure in reading the thick Farmers' Bulletin No. 1406 of the United States Department of Agriculture on "Garden Irises." But if you are more modest and confine your ambition to clumps or borders of this most decorative lily, it is likely that some neighbor can give you sound advice as to variety and cultivation suitable to your soil and locality.

Summer's Bewildering Bloom

As mid-summer approaches, we may likewise wander into an endless maze including merely the hardy perennials. These are exceptionally suited to gardens that do not enjoy the services of a professional gardener.

No flower lovers with a saving touch of rusticity in their make-up can afford to be without some tall and happy hollyhocks. It seems almost impossible to think of anything but simple, sweet content in connection with a home set about with hollyhocks.

Nasturtiums, despised by some haughty experts for the most attractive reason that they are so hardy anyone at all can make a success of them, will carry your borders brightly from mid-summer until well after light frost. There's such a profusion of summer flowers that one must hesitate between favorites like peonies, perennial phlox, delphinium and a score of others equally desirable.

As for later autumnal blossoms, scarlet salvia, golden glow, rudbeckia and dahlias struggle for preference. But when it comes right down to the very best early and late autumn flower, nothing can exceed in brilliancy and variety of color the modern large-flowered zinnias. When we have come this far along, we find ourselves right up with the precious chrysanthemums, sometimes called Christmas roses.

So here we are again, looking from the inside out over a garden full of snow, enlivened by varied evergreens, bright berries and flitting birds.

Choose Wisely, Tend Well

You may consider this a meager list of garden flowers. It is purposely so. Only such things as can be grown in cottage gardens are suggested. Carefully planted and properly tended, they will never leave you without some bright spot in your garden.

Choice must be limited and regulated by climate. The fortunate Floridian or dweller in southern California is scarcely interested in selecting flowers with the definite idea of prolonging the season of bloom. They know neither the melancholy of approaching winter nor the joyous thrill of spring. A useful guide in making a choice may be found in what flourishes best in neighboring gardens.

Everything in this world has its price. Why then should we expect to get such beautiful possessions as flowers without paying the price of some thought and care? A successful florist asserts that a 10-cent plant, well tended in good soil, gives better results than the most expensive if carelessly planted and ill-tended.

What do you think of the man who vowed to his wife that he would love her until death—*provided* she didn't live to grow old? There are more such vows than meet the ear.

Experiences With Fruit Stocks in New York

(*Continued from page 8*)

the large blue plums of commerce, are the more watery Japanese kinds, the smaller native American plums, and the small-fruited Damson types.

Plum Rootstocks Tested in New York

To determine which stock was best for the several types of plums more usually grown, the New York State Agricultural Experiment Station planted an orchard some years ago of 15 varieties, four trees of each one on each of six different stocks—Myrobalan, St. Julien, peach, Americana, Marianna and Domestica. Representing the European or Domestica plums were the Bradshaw and Grand Duke from the large-fruited blue plums grown in eastern orchards; Italian prune, grown commonly for prune making in the Pacific Northwest; the cosmopolitan Lombard; and the Reine Claude from the Green Gage group. The small-fruited European varieties belonging to *Prunus insititia* were represented by Shropshire among the Damsons and Drop d'or among the Mirabelle varieties, the latter so highly esteemed in Europe and almost unknown in America, yet worthy of a place in every home orchard. From the Japanese varieties were Abundance, Burbank and Chabot; while representing several native American species were Wayland, Forest Garden, Pottawattamie, Wild Goose, and De Soto.

The results are clear-cut, namely, Myrobalan is outstandingly superior for practically all of the species and varieties. The peach has done fairly well as a stock, and some of the native varieties have been satisfactory on native stock, but as a general purpose stock the Myrobalan stock commonly used by nurserymen is far superior to any other used in the tests. For the hardy native plums in colder regions, the native stocks are probably better, and for lighter soils the peach roots may be preferred, yet for the plum growing sections of New York state, Myrobalan is the best.

Cherries offer an interesting example. One hundred years ago sweet cherries were regularly worked on wild sweet cherry, known as Mazzard. Unfortunately, Mazzard seedlings are very subject to leaf spot in the nursery and are not as easily grown as some other cherry stocks, as, for example, the Mahaleb stock. And so, because no one had any suspicion that it might not be the best, Mahaleb stock came to be the accepted stock for cherries—both sweet and sour. It was easily raised in the nursery, it could be budded over a long season, it united well with both the sweet and the sour varieties, and it produced strong, vigorous trees.

Mazzard Stock Is Best for Cherries

Within the last 20 or 25 years, however, there has been a feeling that Mahaleb roots are not all that they have been thought to be. Cherry growers on Long Island first complained of the short life of Mahaleb-rooted trees. Hudson River Valley growers next noticed the same point, and finally western New York growers joined. Happily for the question in controversy, the state experiment station at Geneva, N. Y., began an experiment 15 years ago to determine the relative value of Mahaleb and Mazzard stocks. Fourteen years of records show clearly which is the better stock for the average commercial cherry orchard of the section.

Forty varieties of cherries were used—17 sweet varieties, 14 sour kinds, and nine "Duke" cherries, which are crosses between the sweet and sour species. All of the common varieties were included, four trees of each, with two on Mazzard roots and two on Mahaleb roots. The soil is heavy. Now, after 14 years, all but two of the 34 sweet cherry trees on Mazzard roots are vigorous and thrifty—certainly a record of health and congeniality. Quite by contrast, 20 of the original trees on Mahaleb roots are dead, and of the 14 remaining trees, all are either weak or dying. The supremacy of the Mazzard stock in this case is unquestionable.

With the sour varieties Mazzard roots again excelled though not to so great a degree. The 28 trees on Mazzard roots were all alive but one at the end of 14 years. The same original number on Mahaleb roots had only 12 survivors at the end of the same period, while five of these are either weak or dying.

The Duke varieties show the same trend. Out of 18 trees on Mazzard roots, all but one were alive at the end of 14 years. Out of 18 trees on Mahaleb roots, seven were dead and seven of the 11 survivors are now either weak or dying.

Undoubtedly, there are localities in which Mahaleb roots are equal, if not superior, to the Mazzard, especially when hardiness is a factor. But for the average cherry orchard in the principal cherry sections of New York state, this test reaffirms popular belief that Mazzard is superior as a stock for all classes of cherries. It costs more to produce a tree on Mazzard roots, so that, in all probability, nurserymen will be forced to demand a premium for trees on Mazzard stock.

The Question of Apple Stocks

The question of stocks for apples is not a live topic at this moment, so far as the orchardist is concerned. Standard trees are the accepted fact, worked either on French crab or seedlings from home grown seed. Yet 25 years ago, and to a small extent today, the dwarf apple tree was seriously discussed for orchard planting. A test begun in New York state at that time showed plainly that the dwarf orchard could not compare with the standard orchard for commercial purposes.

Three orchards in different sections of the state on different soil types were planted to some 20 odd varieties on three stocks, namely Paradise or full dwarf, Doucin or semi-dwarf, and French crab or standard. The dwarf trees, even with the greater number per acre, failed to produce as much fruit as the standard trees. Furthermore, the dwarf trees were shallow rooted and blew out and were winter injured. In no single respect were the dwarf trees superior to the standard trees, although because of their small size they appeared useful for the home gardener or the men of small acreage.

Grape Grafting Offers Possibilities

The grape is seldom considered a topic for discussion when stocks are considered, yet it may well be. Although most varieties of American grapes are propagated from cuttings and are, therefore, on their own roots, there are many possibilities in growing grapes on other than their own roots. As a matter of fact, the vineyards of Europe are growing on American roots, forced to it by the phylloxera or root louse introduced from America, which finds the fleshy European grape roots an easy prey. American varieties are relatively resistant to its attacks. Grafting has therefore become a regular practice in European grape culture, and the methods of procedure have been refined to give excellent results.

In America, especially more recently, the demand for quantity production of grapes with little or no regard to individual varietal flavors and quality, has driven all but the high-yielding Concord out of eastern vineyards. No grape of lesser tonnage can compete with it. By grafting some of the less vigorous yet high quality grapes onto vigorous growing stocks, it is possible to increase yields considerably.

In the famous Chautauqua grape section of western New York, three vigorous stocks have been used with the Campbell Early, Catawba, Concord, Delaware, Iona and Niagara varieties. The stocks included a vigorous native variety, Clinton, and two vigorous stocks developed by the French for use in grafting, namely, Riparia Gloire de Montpelier and Rupestris St. George du Lot. Delaware, for example, increased its yield on Riparia roots, as compared with own roots during a five-year period from 1.3 tons per acre to 2.08 tons. Catawba yielded almost twice as much on Clinton roots as on its own roots, or 3.01 tons per acre on Clinton roots as compared with 1.53 tons on its own roots. Campbell Early was more than doubled by grafting, the yield of 3.03 tons per acre on Gloire roots comparing favorably with 1.44 tons on its own roots.

In general all varieties were benefited by grafting, yet the increase of such vigorous growing varieties as Concord was not sufficient to justify the practice. The weaker growing kinds on the other hand were greatly improved, and sufficiently so to warrant recommending the practice strongly to those who desire to grow the more delicate of American grapes.

Experiences of the kinds that have been here mentioned give an indication of the refinement that is creeping into American horticulture. It may be that for the present the fruit stocks in use are fairly satisfactory, but the indications are that the next generation of fruit growers will be making demands along lines about which the present generation has been little concerned.

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Canada Modifies Embargo on Peaches

THE CANADIAN government has lifted the embargo on fresh peaches and peach nursery stock from the United States into Canada except in the provinces of Ontario and British Columbia.

Under the new ruling, peaches and peach nursery stock may not be imported into British Columbia or Ontario from all states east of the Mississippi and St. Croix rivers and from Arkansas, Louisiana, Missouri and Texas. Importations may be made into other provinces than British Columbia and Ontario provided the shipments are accompanied by a certificate signed by the consignor and indicating the origin of the products.

Importation of peach seeds or pits for propagating purposes into British Columbia is prohibited from the states east of the Mississippi and St. Croix rivers and from Missouri, Arkansas, Louisiana and Texas. Seeds and pits may be imported into British Columbia from other states provided the shipment is accompanied by a certificate signed by the consignor showing the origin.

Fresh peaches, peach nursery stock and peach seeds may be transported through Ontario on a through bill of lading en route to points outside Ontario except British Columbia.

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

We Stuff Our Vegetables

WHEN the ever-pressing question of "What shall we eat?" becomes even more pressing than usual, and you rack your tired brain for a new, interesting, practical, and economical idea for the main dish for the family dinner, just remember that the happy solution of your problem is some form of a baked, stuffed vegetable.

Stuffed vegetables are always pleasing to the eye and palate. The fact that they are invariably well-seasoned accounts in a great measure for their popularity with those who use them often. They come in infinite variety, as almost any well-shaped vegetable can be stuffed. Left-over meats can be used to very good advantage as the basis for the stuffing of some vegetable on hand, or certain vegetables may be used to stuff other vegetables.

"Last Minute" Dishes

Stuffed vegetables may also be classed under the popular group of last-minute dishes, for with the exception of potatoes, the preliminary work may be done early in the morning, and then the stuffed vegetables may be heated up in the oven ready for service at night. They will be ready by the time the table can be arranged and the accompaniments prepared. This works to advantage in all seasons of the year, in the busy entertainment winter season, the spring gardening season, the hot summer season, or the fall sewing and canning season. We cooks can always use recipes for excellent "hurry-up" dishes.

For these reasons, we believe that the suggestions and recipes to follow will find appreciative readers among the housewives throughout the country. They are tested recipes from dependable sources.

Beets Stuffed with Spinach

Select six medium-sized beets and scrub them well. Place them in a tightly covered baking dish with just the water that clings to them; bake them until tender in a moderate oven, then remove and slip off the skins. When cool enough to handle, scoop out the centers of the beets, leaving good-sized cavities in each. Sprinkle with salt and pepper, and place a tiny piece of butter in each.

While the beets are baking, pick over and wash carefully in several waters two quarts of spinach. Cook until tender, adding not more than one cupful of boiling slightly salted water and removing the cover from the pot when the whole is boiling rapidly. When tender, turn into a collander and drain. Then chop fine and add one hard-cooked egg chopped fine, two tablespoonfuls of butter and one-half teaspoonful of salt.

Press the prepared spinach into the beet cavities, cover with a few buttered crumbs and bake in a hot oven for 15 minutes or until the crumbs are browned. Baked stuffed beets are delicious served with a cream or lemon sauce. They are also excellent served plain. The preliminary work could all be done in the morning, then the final baking could be done in a short time at the dinner hour, if the housewife needed a "quick meal."

Stuffed Sweet Potatoes

Cut baked sweet potatoes lengthwise, scoop the potato out of the shell and pass it through the potato ricer, or mash thoroughly. To each cupful of mashed potato add one tablespoonful of cream, one teaspoonful of melted butter, a scant half teaspoonful of salt, and one-eighth teaspoonful of paprika. Beat up until light and fluffy.

Place in a saucepan a quarter cupful of brown sugar, an equal quantity of butter and finely chopped pecan or other nut meats; cook together for about three minutes. Return the mashed potato to the shells, heaping them up, and glaze over with the nut mixture. Place in a hot oven for a few minutes to brown. Serve hot. It is a good plan to bake one more potato than will be needed for servings. That makes it possible to round up the filling in the shells attractively. The glaze recipe given herein is sufficient in quantity for six large halves.

Stuffed White Potatoes

Select large potatoes of uniform size and shape, allowing one potato to each person to be served. Scrub the potatoes thoroughly with a brush, place in pan in hot oven and bake until they are easily pierced by a fork. Remove from the oven and cut in halves lengthwise, or merely make an incision lengthwise in the top, if you prefer. If the potatoes are small or medium in size, it may be best to cut them in halves crosswise to form cups. The main idea is to cut them to achieve the best possible effect when finished. Now scrape out the potato from the shell and season with butter, salt and cream, allowing one-half tablespoonful each of butter and cream to each medium-sized baked potato. Then put the seasoned potato through the potato ricer and return to the shell, heaping the stuffing up nicely. Place in hot oven until brown. Serve at once.

Stuffed Baked Onions

Select six large, firm onions of uniform size. Remove the brown skins from the onions, place them in hot water and bring to simmering point. Cook gently until barely tender, as slow cooking will retain the shape of the vegetable where fast boiling would not. Shortly before done, add salt to taste, then drain. There should be very little liquid left. Chop the portion of onion that was removed.

Cool the vegetables sufficiently to handle, then cut a piece from the top of each onion and remove the inner portion, leaving a firm outer wall. To this chopped onion, add one chopped hard-cooked egg, two tablespoonfuls of fine bread crumbs, four tablespoonfuls of grated cheese, and two tablespoonfuls of white sauce for moisture. Refill the onion cups to heaping, cover with buttered crumbs and brown in hot oven. About four tablespoonfuls of buttered crumbs will be required.

Carrots With Onions

Those who have tried carrots stuffed with onions are especially enthusiastic over the wonderful flavor produced by the combination. It is a favorite Oriental dish and one that most people will like even when not overly fond of carrots.

Choose carrots which are rather squatty and thick. Scrape them and boil until tender, or nearly so, in slightly salted water. Remove from the fire, drain and let cool. With an apple corer or other sharp instrument, remove the center of each carrot to form a cavity suitable for stuffing. Mince very fine enough onions to make half a cupful, add two tablespoonfuls of minced parsley, a quarter teaspoonful each of salt and paprika, and saute slowly in one tablespoonful of melted butter for five minutes. Then stuff the cavities in the carrots with this onion mixture. To do this, stand the carrots on end and fill with the onion, using a wooden skewer to pack the onion down. This quantity will fill six to eight carrots, depending on the size of the cavity and of the carrot.

When all the carrots have been stuffed, roll them in fine dry bread crumbs, then in egg which has been slightly beaten with two tablespoonfuls of cold water, and then again in crumbs. Place the stuffed carrots around any kind of roast 30 minutes before the meat is done. Baste them occasionally so that they will be nicely browned. Or, they are delicious served by themselves as a straight vegetable dish. For this, they should be dotted generously with butter, or each carrot should be rolled in a thin slice of bacon, and then baked in a hot oven for 30 minutes.

Potatoes With Cheese

Select large, smooth, baking potatoes of uniform size, allowing one potato for each serving. Scrub them well, put them in a very hot oven and bake until they are about half done; then remove them from oven and cut in halves lengthwise. Hollow out the potatoes a little in the center, making the cavities long and shallow rather than deep. Sprinkle these long cavities with salt and pepper and fill with a cheese mixture, made by mixing half a cupful of grated American cheese with one finely chopped pimento. Dot potatoes sparingly with butter, return to the oven, and bake until they are tender. Serve at once, very hot.

Stuffed Eggplant

Cut two medium-sized eggplants into halves and cook until tender in boiling salted water. Drain and scoop out the center of each half with a silver spoon. (Eggplant darkens when it comes in contact with steel or aluminum.) Drain and chop the pulp, and add to it half a cupful each of minced cooked ham or other meat, grated sweet corn, dry bread crumbs, and canned tomato pulp. Also add one and a quarter teaspoonfuls of salt and a quarter teaspoonful of pepper. Fill the eggplant shells with this mixture, cover with dry bread crumbs, dot over with butter, and bake in a hot oven for 15 minutes, or until nicely browned. Left-over meats may be utilized in this recipe with excellent results.

Sweetbreads in Peppers

Select six medium-sized sweet red peppers and prepare them for stuffing by removing a slice from the stem-end and extracting the seeds and the tough membranes. Soak two small sweetbreads or one large one in cold water to cover for one hour; drain and cover with fresh cold water, add one teaspoonful each of salt and lemon juice, bring to the boiling point and simmer for 10 minutes. Drain, blanch in cold water and cut up in small cubes, discarding the membrane.

Place two tablespoonfuls of butter in a frying pan, add a quarter cupful of minced celery, half a cupful of shredded blanched almonds (other nuts may be used), one dozen large canned shrimps cut in small pieces, and the sweetbread cubes. Stew slowly for five minutes, add half a teaspoonful of salt, and fill the pepper cups with the mixture. Cover with buttered crumbs and bake 20 minutes in a moderate oven. Serve with cream or tomato sauce. Crab meat, oysters or other cooked fish may be used in place of the shrimps.

Tomatoes With Macaroni

Left-over macaroni and cheese may be used very successfully as a stuffing for either canned or fresh tomatoes or green bell peppers. Remove centers of the vegetable to be stuffed in the usual way, then fill cavities with macaroni and cheese chopped medium fine. Cover with buttered crumbs and bake. For canned tomatoes, merely brown the crumbs in a hot oven. For fresh tomatoes or bell peppers, bake slowly for 30 minutes in moderate oven, until shells are tender but not broken. Serve with toast points either plain or with white sauce or tomato sauce.

Almost any left-over meat may be chopped fine, seasoned with salt, pepper, onion, diced celery, tomato puree, a bit of bay leaf, minced parsley, a

hint of spices, or any other suitable savory spice or vegetable and then used as a stuffing for any prepared vegetable cup of suitable shape. They may be finished off in a hot oven and served with or without sauce as preferred. Left-over chicken or other fowl makes wonderful fillings for stuffed peppers, onions, tomatoes or eggplants. Every recipe given in the article can be varied to suit the ingredients on hand.

With the suggestions given herein as a foundation and a starter, the ingenious housewife should be able to "concoct" some unusual and delicious vegetable dishes for the winter months, when the choice in vegetables as well as other foods is naturally limited.

Protect Drumsticks

THE DRUMSTICKS on the turkey or goose always tend to burn in the roasting process. You can prevent this by saving a ring of skin cut from the surplus neck skin of the fowl, and slipping this over the ends of the drumsticks where they are tied together. The piece should be about three inches long. In this way the "children's favorites" will not scorch.

Use Sugar Scoop

A SMALL sugar scoop costs only 15 cents, and by purchasing one for the sugar bin you can save yourself much grief. Sugar does not stick to the tin or aluminum as it does to a cup or glass, and the scoop is therefore clean and shining at all times, where the glass would be "gummed up" with sugar. It is more economical, also, because it prevents waste.

Floater for Pickles

OFTEN after the pickle jar has been opened and part of the product used, the remaining pickles want to float on the top of the liquid and thus lose some of their goodness. This can be prevented by floating as large a piece of paraffin as will pass through the mouth of the jar over them and on top of the liquid.

The oil from walnut meats will make small scratches on furniture entirely disappear. The nuts should be finely chopped or crushed and should be rubbed on the scratch with the finger.

Winter Salads Using Gelatine

SALADS in winter present a difficult problem to those who desire to serve them every day. The usual seasonal vegetables and fruits seem to form a short list when they must be combined differently every day. When gelatine is called in to assist, many of these old standbys take on delightful new forms and seem quite new. One of the nicest of the jellied salads is made with canned tomato. It is most economical to open a quart can when preparing for the jellied tomato salad, as the juicier portion may be saved for the salad and the solid vegetable used for scalloping or stewing. The jellied salad may be made at once for the next day's dinner. Here is the recipe for jellied tomato salad, together with other suitable recipes:

Jellied Tomato Salad

2 c. canned tomato
1½ t. onion, minced
1 t. salt
2 t. sugar
⅛ t. white pepper
1½ T. gelatine
4 T. cold water
¼ t. paprika
½ c. shredded cabbage
½ c. diced celery

Cook the canned tomatoes with the chopped onion for 5 minutes, then put through the sieve. Soften the gelatine in the cold water till it swells. Stir in the salt, pepper, paprika, and softened gelatine into the hot tomato liquid. Let cool, then add the chopped vegetables (after it begins to thicken). Pour into a mould and let stand over night. Unmould when wanted onto a bed of lettuce or shredded cabbage and serve with mayonnaise dressing. A few left-over carrots, string beans or peas may be used in this recipe with good results also.

Jellied Salmon Salad

1 package lemon gelatine
2 c. boiling water
1½ c. salmon flakes
2 T. sweet pickles
1 T. green olives
¾ c. diced celery

Dissolve the prepared lemon gelatine in the boiling water. May substitute 1 to 2 T. vinegar for water in the liquid if a more tart flavor is wanted. Cool until it begins to thicken, then stir in the salmon, from which all bones have been removed, the chopped olives, pickles and celery. The olives may be omitted if desired. Pour into wet moulds and set aside till firm and jellied. Unmould on beds of crisp lettuce leaves or shredded cabbage. Serve with tart mayonnaise with an eighth of a lemon as garnish on each plate. Sliced cucumber will also make a nice garnish.

Jellied Fruit Salad

2 T. gelatine
1 c. cold water
1½ c. boiling water
½ c. lemon juice
½ c. sugar
3 small apples
1 c. diced celery
¾ c. broken nuts

Soak gelatine in cold water and dissolve it and the sugar in the hot water. Add the strained lemon juice and let mixture cool. When it begins to thicken stir in the apples, which have been pared, cored and cut in small pieces, the chopped celery and the nuts. Be sure to use tart apples. Turn mixture into wet moulds, chill over night, and serve with sweet mayonnaise or boiled dressing to which whipped cream has been added. Other fruits, such as pineapple, bananas, cherries and oranges may be used.

Perfection Salad

1 package gelatine
½ c. cold water
½ c. mild vinegar
2 T. lemon juice
½ c. sweet pickles
½ c. chopped nuts
2 c. boiling water
½ c. sugar
1 t. salt
2 c. diced celery
2 diced pimentos
1 c. shredded cabbage

Soak gelatine in cold water 5 minutes. Add vinegar, lemon juice and boiling water, sugar and salt. Strain, and when mixture begins to thicken add remaining ingredients. Turn into wet moulds and chill over night. Unmould onto beds of lettuce leaves or endive. Garnish with mayonnaise, tiny pickled beets, green sweet pickles, stuffed olives, or strips of pimentos.

Bridge Salad

1 package lemon gelatine
1 package mint gelatine.
1 small can grated pineapple
2 c. cottage cheese.

Drain juice from pineapple and add enough water to make 1 c. of liquid. Bring liquid to a boil and with this dissolve the package of lemon gelatine. When cool, add drained pineapple and cottage cheese. Mould in a square pan to a depth of about one inch. When firm and set, have other package of mint gelatine dissolved in boiling water and cooled. Add another layer to salad by pouring this latter over the first layer. Cut in squares and serve with or without dressing on crisp lettuce leaves as individual salads. The creamy under layer with the green top layer gives a delightful appearance as well as flavor.

Fruit-Marshmallow Salad

2 T. gelatine
1 c. cold water
2 c. boiling water
½ c. sugar
1 tart apple
¾ c. chopped nuts
4 bananas
1 c. diced celery
1½ c. marshmallows

Soak gelatine in cold water and dissolve it and the sugar in the boiling water. A few drops of lemon juice may be added if apples are not very tart. Let mixture cool until it begins to thicken. Then stir in the apple, which has been pared, cored and cut fine, the nuts, celery, sliced bananas, and marshmallows cut in quarters. Turn mixture into wet moulds and let stand over night. If desired, a thin layer of gelatine mixture may be placed in bottom of mould, letting this set before putting in the fruit mixture. This gives a nicer effect when unmoulded. Serve with boiled dressing to which whipped cream has been added. Pineapple, oranges, canned pears, white cherries, maraschino cherries and canned peaches are some of the other fruits which may be used in the recipe. Three cups of fruit gelatine (made from patented product) in strawberry, raspberry or cherry flavor would be an excellent substitute for first four items in this recipe.

Cheese Jelly Salad

½ c. Roquefort cheese, creamed
1 T. gelatine
½ c. cold water
½ c. boiling water
1 c. thick cream

Salt, pepper and paprika to taste

Soften the gelatine in cold water, dissolve in boiling water, and set aside to cool. When it becomes somewhat firm, fold in the stiffly beaten cream and other seasonings, then add cream cheese and pour into either a large mould or small individual moulds. Chill, and when firm and cold, unmould onto bed of lettuce or shredded cabbage.

Table of Abbreviations

1 t. equals 1 teaspoonful.
1 T. equals 1 tablespoonful.
1 c. equals 1 cupful.
1 pt. equals 1 pint.

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POUND PACKAGES BEES. TWO POUND PACKage with 1928 Italian queen, $3.50; 3 pound package, $4.50. Satisfaction guaranteed. Overbey Apiaries, Leonville, La.

BOOKS

FREE BOOK—ELIJAH COMING BEFORE Christ. Megiddo Association, Rochester, N. Y.

DOGS

HUNTING HOUNDS, HUNTING SUPPLIES, free catalogue. Kaskaskennels, WT-38, Herrick, Ill.

FARMS AND ORCHARDS

FRUIT GROWING IN THE OZARK REGION of Southern Missouri and Northern Arkansas has a big advantage in having soil and climate ideally adapted to fruit and berry culture. The gentle slopes of the Ozarks with its fine grained clay soil, abundant rainfall, mild winters, early springs, make the Ozarks ideal for the fruit grower. The nearby cities of St. Louis, Kansas City and Memphis provide great markets. The healthful climate, pure mountain spring water, the fine spirit of co-operation, prosperous and growing communities, good schools and hard surfaced roads make a delightful home-land. Land can still be bought at reasonable prices that will insure good profits on grapes, strawberries, apples, small fruits and vegetables. Write for more facts. Frisco Railway, 889 Frisco Building, St. Louis, Missouri.

IMPROVED FARMS FOR RENT IN MINNEsota, North Dakota, Montana, Idaho, Washington and Oregon. Make a trip and see the growing crops. Cheap round trip homeseeker's tickets. Write for free books. E. C. Leedy, Dept. 975, Great Northern Railway, St. Paul, Minn.

TEN-ACRE BEARING ORCHARD IMPROVED. Ten-acre farm improved. Twenty-acre young orchard. In heart of Ozarks. Roy Jackson, Owner, Republic, Mo.

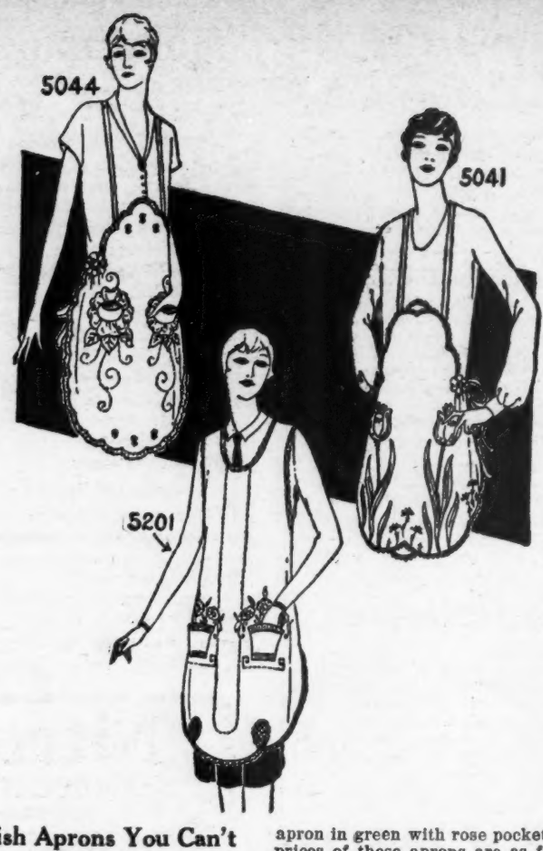
FRUIT FARM IN THE COAL BELT OF ILLInois. Market at your door. Half cash, balance time. John L. Franklin, Benton, Illinois.

OZARKS, 40 ACRES IN FRUIT BELT, $220, $10 monthly. Albert Zimmerman, 1802 N. Fifth, Kansas City, Kansas.

FARM WANTED

WANT TO HEAR FROM OWNER HAVING farm for sale; give particulars and lowest price. John J. Black, Box No. 68, Chippewa Falls, Wis.

WANTED—TO HEAR FROM OWNER OF LAND for sale. O. Hawley, Baldwin, Wis.



Stylish Aprons You Can't Resist

Nos. 5041, 5044, 5201—We herewith present a selection of aprons that will appeal very strongly to the woman in the home. No. 5041 is on yellow material with lavender pockets, flat stamped, and you will note that the design is most charming. No. 5044 is on blue material with maize pockets, and No. 5201 is a completely made apron in green with rose pockets. The prices of these aprons are as follows: Nos. 5041 and 5044, 55 cents each. No. 5201, completely made apron, 95 cents. A detailed working chart showing the exact color scheme is furnished with each piece.

For 25 cents additional we will send you our book, "The Art of Embroidery," consisting of 10 complete lessons with 70 illustrations showing all the principal stitches in embroidery.

Embroidery Department, American Fruit Grower Magazine,
7417 Luella Avenue, Chicago, Ill.

Palatable Food Agrees Best

SUCH people as live to eat, as well as those who eat merely to live, are making a mistake. The first show an obviously ignoble idea of the ends of existence. The second idea sounds rather noble—but is it?

Any attempt to carry it out literally, will defeat its own ends. Those who completely disregard the pleasure of eating may become as unhealthy and almost as blame-worth as those the Bible censures "whose God is their belly."

In the matter of food, enough, in one sense, is not enough in another. Sufficient to support life may be consumed, but unless it is properly varied, health and consequently efficiency (probably also temper and nerves) will suffer.

More than that—it is advisable to eat things you can enjoy. What we eat with pleasure is more readily digested and nourished better than distasteful food.

Appetite will flag if pleasing the palate is ignored. The housekeeper should keep a watch on those gathered round her board and when certain dishes begin to pall, it is time to substitute others that will appeal to the taste.

Poorly Lighted Kitchens

HOUSEWIVES everywhere like to save as much time and labor as is consistent with comfort and efficiency. The law of supply and demand has developed many devices for the alleviation of work for the woman who presides in the kitchen as well as over the rest of the house.

Few young couples, even the youngest and most inexperienced, will plan a house without seeking the best information on the subject of convenient kitchens. Architects, advertisers, books, bulletins, parents and shopkeepers stand ready to offer advice or to deplete the purse as the case may be.

Some novelties are simply catch pennies. Many are of real value. Some are very expensive, others which are very desirable cost but little. One of the most usual deficiencies even in well appointed kitchens, is that of artificial light. If a meal must be prepared after dark, the cook is too often left to grope in semi-darkness.

This may be the case even in an electrically lighted house. False economy dictates a weak bulb for the kitchen, whereas a good bright light would soon save enough time to make up for the difference in cost of current.

Kerosene lamps are very dangerous. Where they must be used, they should be placed in solid brackets at the right place to cast a good light upon the stove, sink, or other working place. Many buildings are imperiled as the cook takes up the oil lamp and holds it while she peers about at her work.

WHEN in doubt whether it pays in the long run to make sacrifices for the child's education, nerve yourself to further effort with these government statistics. An elementary education gives him four times the chance to succeed that his illiterate brother has. High school increases his chances to 87 times. The college graduate has an 800 to one chance of success. In terms of dollars and cents, every day spent in school is worth $9.02 in after life.

Classified Advertising

(*Continued*)

FURS WANTED

SKUNKS, MUSKRATS, MINK, RACCOON AND all other kinds of raw furs wanted. Write for free price list. Charles A. Kaune, 294 Bridge Street, Montgomery, N. Y.

HELP AND INSTRUCTION

MEN-WOMEN, 18 UP. U. S. GOVERNMENT life jobs. Commence $95.00 to $158.00 month. Steady. Common education sufficient. Sample coaching and full particulars—free. Write today. Franklin Institute, Dept W-78, Rochester, N. Y.

EARN $25 WEEKLY SPARE TIME, WRITING for newspapers and magazines. Exp. unnecessary. Copyright book, "How to Write for Pay," free. Press Reporting Inst., 979, St. Louis, Mo.

HELP AND INSTRUCTION—FEMALE

WANTED—GIRLS-WOMEN, 16 UP. LEARN gown making at home. $35.00 week. Learn while earning. Sample lessons free. Write immediately. Franklin Institute, Dept. W-545, Rochester, N. Y.

HELP WANTED

MEN, GET FOREST RANGER JOB; $125-200 month and home furnished; permanent; hunt, fish, trap. For details write Norton, 202 Temple Court, Denver, Colo.

MISCELLANEOUS

OLD MONEY WANTED—WILL PAY FIFTY dollars for nickel of 1913 with Liberty head (no Buffalo). We pay cash premiums for all rare coins. Send 4c for Large Coin Folder. May mean much profit to you. Numismatic Co., Dept. 546, Ft. Worth, Tex.

MOTORCYCLES

USED MOTORCYCLES. ALL MODELS. EASY payments. Free catalog. Western Motorcycle Co., 908 E. 15th, Kansas City, Mo.

NURSERY

PEACH TREES, $5.00 PER 100 AND UP. APPLE trees, $7.50 per 100 and up. In large or small lots direct to planters by freight, parcel post, express. Plums, pears, cherries, grapes, nuts, berries, pecans, vines; ornamental trees, vines and shrubs. Free catalog in colors. Tennessee Nursery Co., Box 101, Cleveland, Tenn.

TWO-YEAR CONCORD GRAPE PLANTS LESS than 2c each. Mastadon, the world's largest everbearing strawberry. Bears July to December. Also full line nursery stock. Catalog free. George Stromer, Route 1, New Buffalo, Michigan.

CHINESE ELM—HARDY FAST-GROWING, Alkali resistant, dry land shade tree, introduced by U. S. Government, highly recommended by them. Washington Nursery, Toppenish, Wash.

APPLE AND PEACH TREES, 5C AND UP; grapevines, 3c, best varieties. Catalog free of fruits, berries and ornamentals. Benton County Nursery, Box 211, Rogers, Ark.

NUTS

FANCY OREGON FILBERTS, FIVE POUNDS DElivered to any part of the United States for $2. Ray Yocom, Eugene, Oregon.

ORCHARD SUPPLIES

EVERYTHING FOR THE FRUIT GROWER. Write for price list. S. H. Burton, Distributor, Washington, Indiana.

PLANTS

GIANT MASTODON EVERBEARING STRAWberries. World's largest. Eighteen one quart. Bears three crops. First years. July until winter. Plants less than 1½c each. Why pay more? Champion Originator. Illustrated catalogue free. Edw. Lubke, New Buffalo, Michigan.

MOSAIC FREE LATHAM RASPBERRY AND the new Beaver strawberry plants. A. B. Coleman & Son, Aitkin, Minn.

PATENT ATTORNEYS

INVENTORS WHO DERIVE LARGEST PROFITS know and heed certain simple but vital facts before applying for patents. Our book Patent-Sense gives those facts; free. Lacey & Lacey, 924 F St., Washington, D. C. Established 1869.

PERSONAL

EPILEPTICS—WILL TELL YOU HOW I WAS cured from dreadful malady. Nothing to sell. Write Floy Volpert, Dept. B-1, Box 117, Little Rock, Ark.

RHEUMATISM—WILL TELL HOW WAS CURED after many years. Simple home method. Nothing to sell. Charlie Jones, Dept. A-1, Box 1123, Little Rock, Ark.

POSITIONS WANTED

YOUNG MAN WITH EXPERIENCE WANTS orchard work. Box 11, American Fruit Grower.

TOBACCO

SUN-CURED TOBACCO, FINE FLAVOR, MADE sweet and mellow by sun-curing in old-fashioned way. Ten pounds two dollars. Natural Leaf Tobacco Farms, Owensboro, Kentucky.

TOBACCO: KENTUCKY SWEETLEAF, MELLOW, aged. Smoking, 10 pounds, $1.00; chewing, $1.50. Pay when received. Kentucky Farmers, Wingo, Kentucky.

TYPEWRITERS

TYPEWRITERS, $10 UP. EASY PAYMENTS. Yots Typewriter Co., Shawnee, Kansas.

THERE are five experiment stations in Alaska. Each is devoted to products adapted to the climate of its vicinity. At the Sitka station in southeast Alaska, special attention is given to horticulture. The climate there is cool in summer and mild in winter. The work done with strawberries to date indicates that this fruit can be grown profitably in Alaska and that strawberry growing will become an important industry.

Engineering for the Fruit Grower

By E. W. Lehmann

Winter Care of the Automobile

THE CAREFUL automobile owner will give his car more attention, in proportion to its use, during the cold winter months than in other seasons of the year for the following reasons: the storage battery is less efficient, the fuel does not evaporate as easily, the lubrication is not as effective and starting is more difficult. With all these winter handicaps, the automobile is now used every month in the year, when formerly many cars were put into storage for the winter months. Improved carburetion, ignition and starting equipment have made winter starting easier.

The first winter precaution is to look out for the storage battery. It is almost a disgrace now to have to crank an automobile by hand. The battery that is not abused needs little attention during the summer months because the demands made on it are not heavy, but in the winter time it is used a great deal more. Due to the short days, lights are used more during the winter than during the summer, and more energy is used in starting the car. Usually the car is used for shorter trips in the winter time, and the battery is not kept as fully charged.

On account of these conditions during the winter, check up on the storage battery more frequently, especially during January and February. See that the battery has plenty of water; if the plates are not covered its efficiency will be reduced. It is also well to see that it is fully charged. Practice economy in the use of lights. When the car is parked for a few hours, leave only enough lights to meet the requirements of the law.

Winter lubrication of a car is also quite important. It is always desirable to use a high quality oil, and during the winter months its importance is even greater. An oil that becomes stiff and makes it very difficult to turn the motor over when starting should not be used. A low cold test oil is desirable, that is, an oil that will flow at low temperatures. The oil should be changed more frequently during the winter months because of the dilution due to incomplete burning of all the fuel. The wear on the walls of the motor is always increased when the oil has been diluted. The principal cause of dilution of the crank case oil is the free use of the choker in starting. Often the oil level is raised due to the unburned fuel passing into the crank case.

A well-built warm garage is a fine thing for the winter driver. Many of the troubles outlined above are eliminated when a warm place in which to store the car is available. A winter-front for the radiator is worth all it costs, when its value in protecting the motor is considered.

Hints on Operating Home Electrical Equipment

THE FOLLOWING suggestions come from the Nebraska Agricultural Extension Service:

When using an electric iron, it is better to pull the plug from the wall or light socket than to pull the other end from the iron. When the iron cord starts breaking, it is better to buy a new one than to try to fix the old one time after time. The washing machine motor should be lubricated occasionally, but the motor should not be flooded with oil. If a coffee percolator refuses to heat, the trouble may be in the fuse in the bottom of the percolator. The plate beneath the heating device must be removed and the fuse tightened or replaced with a new one. Caution should govern the use of heaters or other electrical devices in bathrooms as the plumbing is an ideal ground for the current should anything be wrong with the electrical device or should a person thoughtlessly touch the device in such a way as to short the current to a part of the plumbing. Decorative paper on refrigerator shelves is entirely out of place because it hinders the circulation of air, one of the important essentials of refrigeration. Electrical devices when used with a few precautions are practical labor savers for farm as well as city homes. More farmers every year are installing electrical equipment other than lights and making good use of it both in and outside the home.

Gas on the Farm

WOMEN on the farm will not need to envy their city friends any longer for the use of public service gas, for as good gas can be obtained in the country as in the city. In fact, many who are now using the new gas claim it gives a cleaner and hotter fire than city gas.

The new product is the result of scientific discovery. For years millions of cubic feet of natural gas from new and abandoned oil wells have been going to waste. By the new process, this gas, already a highly combustible product, is further refined and is converted into liquid form by a special method, after which it is stored in metal drums. In these it can be kept indefinitely without danger and without loss of fuel value.

This "bottled gas," as it is popularly called, is forced from the drums by its own pressure as soon as a valve is turned and changes to gaseous form immediately on passing through the burner. It can be used for all the purposes that city gas is used.

An ordinary installation consists of two drums of gas and a gas stove or other appliance, such as a water heater, radiant heater, ironing mangle, radiator, etc. The drums are placed in the basement or outside of the house and are connected to the stove by ordinary pipes. A valve at the stove permits turning the gas on or off as desired. A transfer valve is used at the drums; thus, when a drum becomes empty, the valve is simply turned, and the empty drum is disconnected and the full drum placed in service. The empty drum is then replaced by a full one. A drum of bottled gas costs $6.50 and lasts the average family about seven weeks.

The new fuel has proved so satisfactory that the City Council of Oglesby, Ill., a town of 5000, decided to use the new gas instead of public service gas after a careful investigation was made. An arrangement was worked out with the distributors whereby the city will maintain a store for the sale of appliances and gas to its citizens as a municipal proposition. The gas will cost the people no more than public service gas, and the profits made in handling the product will help to reduce taxes and make other improvements possible. Furthermore, the city streets and sidewalks will not have to be torn up frequently to permit installation, as is the case with public service gas.

Proper Loads for Electric Motors

MUCH has been said about the value of electric motors and the fact that an electric motor needs little attention and will stand a high overload, etc. It should not be overlooked that the proper loading of electric motors is one of the most important factors in their economical and successful use. Know the requirements of

(*Concluded on page 32*)

First on your garden list this year

Planet Jr.

Planet Jr. No. 4 Combination Seeder and Wheel Hoe is useful every day in the garden season. Equipment includes Seeder, part of 6-in. hoes for weeding, 3 cultivator teeth, 1 plow, 1 leaf guard.

BEFORE you order your seeds, send for the Planet Jr. catalog and garden booklet. You'll be amazed at how much more work you can do, how much better work, how much more ground you can cover with a Planet Jr. Seeder and Wheel Hoe to help.

Planet Jr. Seeders open the furrow, distribute the seed evenly at the right depth, cover and roll them. Planet Jr. Wheel Hoes plow, furrow, weed and cultivate. No matter how small or large your garden, it will pay you to have a Planet Jr.

Ask your dealer for the free new Planet Jr. catalog and garden booklet. Or write us.

S. L. ALLEN & CO., Inc.

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PEACH TREES $5.00 per 100 & up.
APPLE TREES $7.50 per 100 & up.
Small or Large Lots by Express, Freight or Parcel Post. Pear, Plum, Cherry, Berries, Grapes, Nuts. Shade and Ornamental Trees Vines Shrubs. Catalog in colors FREE
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STANDARD GARDEN TRACTORS
Plows Seeds Cultivates Mows Hay and Lawns
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Doubles Yield

and nets $233.50 extra profit

HERE'S the story of what Arcadian Sulphate of Ammonia accomplished for Mr. A. J. Marble, of Omro, Wisconsin

Mr. Marble divided part of his 75-year old apple orchard into two equal plots. Plot No. 1 received no fertilization. Plot No. 2 received Sulphate of Ammonia at the rate of 200 lbs. per acre.

The results of the fertilizer were noticeable almost at once. "The leaves of the trees seemed deeper green," says Mr. Marble, "and they stayed on the trees longer."

But harvest time gave the complete result. From Plot No. 1 (which received no fertilizer) Mr. Marble gathered 200 bushels of apples per acre. From Plot No. 2 (Sulphate of Ammonia) he harvested 440 bushels—a gain of 240 bushels due to Sulphate of Ammonia.

At current prices Mr. Marble's increased yield represented a net gain of $233.50 per acre—over and above the cost of the fertilizer.

Small wonder that Mr. Marble writes us that he is well satisfied with the results from Arcadian Sulphate of Ammonia.

The Barrett Company
Agricultural Dept.
New York, N. Y., Atlanta, Ga., Medina, O., Montgomery, Ala., Memphis, Tenn., Shreveport, La., San Antonio, Tex., Raleigh, N. C., Washington, D. C., San Francisco, Cal. *In Canada*—Toronto, Ont.

Results PROVE the availability of the nitrogen in

ARCADIAN
Sulphate of Ammonia

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The Barrett Company (address nearest office)
Please send me sample package of Arcadian Sulphate of Ammonia. I am especially interested in.....
(*Write names of crops on line above*)
and wish you to send me bulletins on these subjects.

Name_____

Address _____

What Happens to the Bee Colony in Winter?

TO THE BEEKEEPER who is fully informed regarding the life of the honeybee, there is nothing mysterious about its habits and the manner in which the colony is kept going from year to year. But to the general public the honeybee is quite a mysterious creature, and when we explain to uninformed individuals that the honeybee colony may live over winter out of doors without any protection except that given by the ordinary wooden wall of the hive, they usually show some doubt as to such statements.

Bees Are Active in Winter

Scientific investigations by means of electrical thermocouples show that bees do not hibernate during the winter, but remain active in a cluster, in the center of which the temperature may be as high as 85 degrees Fahrenheit, while the temperature just outside the cluster and in the hive may be below zero. Although bees are very sensitive to heat and cold, they are able to withstand extreme degrees of both—and, knowing the temperature outside, one can almost predict what is going on within the bee hive. With ordinary temperatures of 50 degrees Fahrenheit outside and the sun shining, the bees may fly freely and will have a loosely formed cluster inside the hive. If the temperature rises to 60 or 70 degrees Fahrenheit, the cluster inside the hive will be completely broken, and the bees will fly freely in the field. When the temperature outside goes below 50 degrees Fahrenheit, the bees cluster more closely inside the hive, and this cluster becomes more compact as the temperature becomes lower. If the temperature continues downward, there is increased activity inside the cluster, and increased temperatures up to about 85 to 88 degrees Fahrenheit will be developed. In other words, as the temperature outside the cluster becomes lower, the temperature in the center of the cluster becomes higher up to a certain maximum point. This appears to be the reaction of the bees to cold and is necessary on their part to keep the entire cluster sufficiently warm so that the individual bees will not die. Temperatures lower than 40 to 45 degrees Fahrenheit are fatal to individual bees but have no serious effect on the cluster.

When a study of the temperature of the cluster was made it was found that the temperature within the bee cluster becomes lower toward the outer edge, and at the very edge of the cluster the temperature may be as low as 45 degrees Fahrenheit. Just how the bees on the outside edge of the cluster manage to keep alive has not been definitely determined, although it is believed that a shifting of the bees takes place within the cluster, and those on the outside move inward, while the bees on the inside from time to time take the place of the bees in the shell of the cluster.

Winter Protection Extremely Important

It is, of course, necessary for bees to eat honey or sugar stores, which are changed within the body of the bee to produce energy and the heat necessary for keeping up the temperature of the cluster. This is thought to be developed by rapid movements of the body muscles of individual bees. The amount of energy required by a colony of bees out of doors without protection during the winter months must be enormous, for such a colony will use about 30 pounds of winter stores, whereas the colony with good protection in a packing case or in a good bee cellar will require only an average of about seven or eight pounds, and in some cases colonies have been known to pass through the winter on three or four pounds of winter stores. *It is, therefore, quite evident that winter protection for the honeybee colony is extremely important, both from the standpoint of preserving the energy of the bees and for the economical use of food supplies during the winter period.*

The most important condition for successful wintering of bees is that they have good pure winter stores of cane sugar syrup or honey which is free from gums and dextrins. Under these conditions, each colony will pass through the winter in fine condition.

Within the cluster it is not possible to get a definitely clear picture of what the bees are doing and when they feed. But it is known that the cluster remains in place throughout the winter and that apparently during spells of mild weather the bees pass from the cluster to the honey stores and carry them to cells in the waxed combs on which the bees are clustered. Although the bees have no supply of water, the honey is apparently diluted in some manner before being taken up as food.

Broodrearing

As soon as the snow is off the ground in the spring and a few plants begin to produce pollen available to the bees, broodrearing is started. The cluster brings up the temperature to about 90 to 94 degrees Fahrenheit in that section where the queen is resting. They start to feed her a highly concentrated food produced from salivary glands of the worker bees, and egg laying is started. From these eggs young larvae hatch in three days, and the young larvae are fed for three days on special food provided for them by the worker bees, as in the case of the queen. Following this period, they are given a different food, composed of pollen and honey, until they are six or seven days old, when they pass into the resting or pupal stage. They remain in this stage for about 12 days, at the end of which time they transform into young worker bees. The time required for the full period of development is approximately 21 days.

As it becomes warmer in the spring and the sources of nectar and pollen increase, broodrearing is greatly extended, and by May 1 the number of bees present in the colony will have greatly increased. When the colony becomes quite strong, the queen lays other eggs in the drone cells, and in 24 days these develop into drone bees. Later, when the colony becomes crowded, so that there is not sufficient room for all the bees, queen cells are built and queens are reared preparatory to swarming.

American Honey Producers' League to Hold Convention

BEEKEEPERS, their friends and families are invited to attend the annual convention of the American Honey Producers' League and the National Honey Exposition at the Hotel Whitcomb, San Francisco, Calif., on January 25-27.

Arrangements have been made with the railroad companies for special trains to leave Chicago, Minneapolis, St. Louis and New Orleans in time to reach these meetings. Special tourist rates will be given, with stop-over privileges both ways.

A special train from Chicago will leave from the C. & N. W. depot at 2:30 p. m. on January 21. Eastern delegates and beekeepers should plan to reach Chicago in time to connect with the special train.

For special rates from local points, apply to the AMERICAN FRUIT GROWER MAGAZINE, and your request will be turned over to the general passenger agent of the Southern Pacific Railway at 33 West Jackson Boulevard, Chicago, Ill.

The National Honey Exposition, to be held in conjunction with the league convention, will be the first that has ever been put on by a national beekeepers' organization. Suitable prizes will be awarded for the best exhibits, and if the exposition proves successful, an attempt will be made to greatly enlarge it the following year, and plans will be undertaken for an annual honey exposition to be held in conjunction with the league conventions. This is being done for the purpose of attracting honey buyers, so that a better understanding of honey grades and marketing systems can be brought about between the producers and the wholesale buyers.

If you wish to enter an exhibit, send it prepaid to C. W. Hartman, Hotel Whitcomb, San Francisco, Calif.

Engineering for the Fruit Grower

(*Continued from page* 31)

the machine to be driven and act accordingly. Overloading is liable to be expensive and dangerous, because of the likelihood of burning out motor windings. The average electric motor has the ability to carry for a short time overloads of twice the rated load without injury. Overload for a short period is not ordinarily dangerous, but the high average load is liable to cause trouble. It should be always remembered that the limit of the load is determined by the heating of the motor. For this reason motors located in warm places or where the ventilation is poor are liable to cause trouble more readily than if located where the natural ventilation is better.

It is always desirable to observe a motor when it is put into service to see if it heats. Small motors usually operate at fairly high temperatures, so do not become unduly alarmed if the motor feels warm to the hand. In checking the heating of a motor, be sure it is well ventilated and is properly oiled. Localized heating may be due to lack of proper oiling. Heating may be due to the condition of voltage; however, there is little likelihood of this because the variation in voltage is not great on most lines. If odors are in evidence due to heat, indicating the breaking down of the insulating material, it is time to pull the switch.

The objection to operating an electric motor on a low load is due to the higher rate of energy consumption on lower loads. A motor operated at half load would be about 10 per cent less efficient than when operated at full load. If operated at less than half load, the efficiency drops off even more rapidly. For this reason it is always desirable to select a motor to fit the load.

Another reason for not getting too large a motor is because of the added expense involved. The cost of electric motors increases rapidly with increased size; there is also the added cost of wiring and switches to meet the requirements of the larger motor. Even though the first cost may be a little higher, it is always better to use a motor that is sufficiently large rather than one that is a little too small.

To economically use electrical energy on the farm, and to distribute its use over a longer period, the tendency is to use smaller machines driven by smaller motors. Small feed grinders are being developed, also smaller silage cutters, etc. By the use of small motors the power demand is reduced and a smaller transformer will meet the requirement, thereby reducing the cost of electric service. Do not overlook the fact, however, that there is danger in selecting a motor that is operated too near the overload point a great deal of the time.

Trim Shrubs to Conform With Natural Shape

SHRUBS need pruning, watering and cultivating, especially until they have become established. During the first year, shrubs need to establish a root system, and plenty of attention given to them then will be amply rewarded. The tops should be cut back moderately for the first year, and after that should be pruned only when necessary. One need not behead shrubs every year, and if it is necessary to cut them back, the tops should not be left flat, but should be made to conform with the natural shape of the shrub. Any dead wood and broken branches and suckers should be cut out.

Shrubs may be divided into two main divisions for pruning—those that flower in the spring, and those that flower in the late summer or fall. The first group includes such shrubs as spirea, lilac, forsythia and snowball, and should be pruned soon after the shrub has flowered and before the new growth has taken place, for the flower buds of next year will be on this new growth. The second group of shrubs, such as hydrangea, elder and althea, may be trimmed in the early spring.

During the dry season it will help shrubs to give them a good soaking once a week. A mere sprinkling is not sufficient.

Shrubs, such as lilacs, dogwoods and Japanese quince are likely to get scaly, and should be treated with lime-sulphur early in the spring.—*Circular 314, College of Agriculture of the University of Illinois.*

Fertilizing Young Trees

EXPERIENCE with fertilizing young fruit trees in the Hudson River Valley has demonstrated the necessity for care in the application of fertilizer materials if the trees are to escape serious injury, says H. B. Tukey, horticulturist of the New York State Experiment Station, in charge of the station's special fruit investigations in the Hudson River Valley. In most cases injury can be traced to too heavy applications of the fertilizer material or to putting the material too close to the tree, says Mr. Tukey. Careful applications of commercial fertilizers or manure may benefit young trees, but as a rule thorough cultivation the first year will give better results, in the opinion of this authority.

"Each season brings inquiries from fruit growers regarding young trees with burned leaves or trees that have failed to start," says Mr. Tukey. "In many cases the trouble has been traced to too heavy application of commercial fertilizer.

"In tests on yearling apple trees in the Hudson River Valley with varying amounts of several common commercial fertilizers, in most cases either no benefit has been obtained or else injury has resulted. Even manure applied too close to the trees or too heavily has resulted in less growth of the treated trees than of untreated trees.

"For a tree the first year it is set there is nothing so good as thorough cultivation. If fertilizers are used, they should be kept well back from the tree and applied in moderate amounts, especially on light soils. The practice of putting fertilizers in tree holes at setting time is more likely than not to end disastrously."

Pruning Peach Trees in California

(*Continued from page 4*)

which declines with neglect so readily as the peach. This behavior is largely explained by the fact that the peach bears its crop almost entirely on one-year-old wood. Only occasionally is fruit found on spurs, and these are very short-lived. For this reason, it is necessary to prune peach trees more heavily than most other fruits in order to produce sufficient fruit-bearing wood each year. Twenty to 40 inches of growth over the tree as a whole is not excessive for young bearing trees. Older trees may be expected to produce each season an abundance of shoots of from 12 to 30 inches in length.

It is characteristic of the peach that its bearing area is carried higher and higher each year, leaving long stretches of non-fruiting branches that are subject to sunburn and decay and that serve only as a connection between the fruiting periphery of the tree and its sources of water and mineral nutrients—the roots. The denseness of the foliage of the peach makes it difficult to maintain a satisfactory distribution of the fruiting wood in the interior of the tree. Care must be taken to see that the trees are thinned out in order that adequate light may reach all parts and thus insure the production of fruiting branches on the lower limbs. If careful attention is not given to this detail, then the characteristic "leggy" peach tree with sunburned branches and practically all new growth confined to the periphery is the result.

Care of "Hangers"

Hanging shoots and branches, sometimes spoken of as "hangers," are particularly desirable for fruit bearing on peach trees and should be encouraged. Care should be exercised, however, to see that these do not become too long by the addition of a certain amount of growth each year. Such shoots can frequently be shortened and renewed by cutting back to a new lateral. Fruit on these hangers is borne on relatively short annual growths and, sometimes on spurs.

In California, it is seldom that a peach tree fails to set enough fruit buds for a heavy crop. In fact, one of the most perplexing problems in the pruning of bearing peach trees is to determine what amount of fruiting wood should be left to blossom and mature fruit. After the trees have been thinned of the superfluous larger branches and the desired form has been secured, the question arises as to how best to reduce the fruit buds to such a number that the crop which is likely to set will be well distributed and at the same time will not impose too heavy a task at the thinning season. Generally speaking, it is more economical to reduce the crop as much as possible with the pruning shears during the dormant season than entirely by hand thinning after the fruit is set. However, to attempt to thin with the pruning shears so that no hand thinning will be necessary to secure the desired size and quality is likely to reduce the total tonnage to such a degree that the practice will not be economical.

Fruiting Wood Reduced by Two Methods

This reduction of the fruiting wood may be accomplished either by a thinning out and heading back or a combination of these two methods. Care must be taken not to head the new shoots on varieties which bear only at the tip or on the outer half of the shoot, especially when the set of fruit-buds is light. This method of fruiting is characteristic of such varieties as the Tuscan and Phillips Cling peaches. On the other hand, the Elberta, Muir, Alexander, Early Crawford and Lemon Cling are typical of the varieties that bear rather uniformly throughout the entire length of the shoot. With the latter varieties, heading of the fruiting twigs may be entirely feasible and, in fact, desirable.

In some instances the proper amount of fruiting wood should be obtained by:

(a) Thinning out the unbranched one-year-old fruiting shoots.

(b) Cutting back lightly or moderately to laterals the fruiting shoots that are branched.

(c) Thinning out the remaining laterals on these branched shoots.

(d) Heading back the fruiting shoots which are thus left, where experience has shown this to be a desirable practice, either from the standpoint of:

1. Thinning the crop; or

2. Securing new wood growth for the crop of the following year.

Where possible, it is well to cut to the brownish colored, stocky laterals rather than to shoots that are slender and reddish in color, as the former are better adapted to continue the framework of the tree and generally produce fruit of higher quality.

In cutting back to a lateral that is likely to bear fruit the following season, it is advisable to leave a short stub just above the lateral—a quarter or one-half inch long—to prevent the lateral from being broken off by the weight of the fruit.

It is hoped that the above suggestions may be of some value in helping the grower to decide upon a general system of pruning adapted to the needs of his particular orchard. Attention should be called to the fact that the responses of the different trees will necessitate minor modifications of the general system from tree to tree. It must also be pointed out that pruning is only one of several operations and no matter how well carried out cannot make up for neglect or careless execution of the other necessary orchard practices.

In the Orchard Growth Means Progress

(*Continued from page 10*)

fere with growth. The orchardist must protect or insure his orchard against these interferences. This can be accomplished by gassing the peach tree borer, by dusting for the apple leaf skeletonizer, and by spraying for the codling moth and curculio. Cattle often interfere with the growth and proper development of the orchard, and this can be eliminated by fencing. Rabbits, too, are troublesome, but tree protectors keep them in abeyance, while poisoning is effective against the great damage caused by field mice girdling the tree about the ground line.

In spite of the handicaps, orcharding offers a good income to those who are willing to cultivate, prune, fertilize, spray and otherwise bring about conditions suitable for tree growth. Nature will do the rest.

Buying an Orchard

(*Continued from page 10*)

also difficult to locate, so that the choice soon narrows down to selecting an orchard from one or the other of the two remaining classifications. Of these two, the area in which the air settles or "pockets" is the better, it seems, for the same conditions which make it dangerous from frost conditions also make it susceptible to easy heating.

The hardest area to heat effectively is the one in which the air reaches a dangerous temperature and yet moves fairly fast so that the heat produced is soon lost. It is like trying to heat a house with the windows and doors open permitting a strong draft to enter.

10. If you are inexperienced in the fruit business, take an experienced man with you to give you an unbiased opinion. Let this man be your guide and above everything else, don't argue with him about the merits of a certain place; that is, unless you would argue with a compass.

The Most Important Fertilizer for FRUIT

Most of the successful fruit growers and recognized pomological authorities state that the only fertilizer used profitably in the North on Apples, is nitrogen. That is practically true in the South and West.

Every fruit grower has experienced the marked results shown in the physical condition of his trees when they are supplied with sufficient nitrogen. The deep green of the leaves shows health and vigor. The increased size of fruit, and the higher price obtained, all show the advisability of applying Calcium Nitrate liberally and the profit to be made by doing so.

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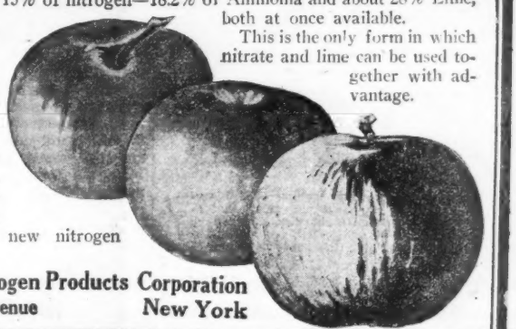

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Vol. 4
No. 2

Fisherman Says He Never Gets a "Bite" From This Tobacco

However, it helps him get the kind of "bites" he wants

The sport of fishing seems to enlarge men's souls, despite all the fish stories we hear. Let a man find a hole where the fish are biting well, and nine times out of ten, if he is a true sportsman, he will let his friends in on the good news.

Evidently the same thing holds true of pipe-smokers. Take the case of Mr. Massey, for example. He has learned from a fellow fisherman how good Edgeworth is, and now wants to tell the world about it himself.

Jasper, Tenn.,
March 23, 1927

Larus & Bro. Co.,

Richmond, Va.

Gentlemen:

I have always wanted to smoke a pipe. After several attempts I gave my "taste" up, for with each trial I got a blistered tongue.

One evening, when looking over a certain outdoor magazine, I read that a certain fisherman could catch more fish when using "Edgeworth," so I decided I would try "his" tobacco—for I am no poor fisherman!

The next day I tried to secure Edgeworth. The local country storekeeper did not have it, so I sent by a friend to the city for my first Edgeworth. Two things have happened; I still smoke Edgeworth, and the local storekeeper always has a supply.

I catch fish and never get "a bite" from Edgeworth!

Yours for keeps,
H. V. Massey.

To those who have never tried Edgeworth we make this offer:

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13 S. 21st Street, Richmond, Va.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are packed in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy in-between sizes.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Edgeworth Ready-Rubbed for the same price you would pay the jobber.

[*On your radio—tune in on WRVA, Richmond, Va.—the Edgeworth station. Wave length 254.1 meters. Frequency 1180 kilocycles.*]

Profitable Poultry

By Ralston R. Hannas

The Layers in January

ONE OF the important things to watch in the care of layers during the winter is the feeding. Grain and mash—not grain alone—will get the eggs and keep the birds in good condition. Mash is the egg food, while grain is the body builder. The usual practice with commercial poultrymen who make their living from poultry is to feed the dry mash in hoppers kept before the hens all the time so they can help themselves whenever they want to, while the grain is fed in the litter for the birds to scratch for. Farmers who are following this method are finding that they are getting good results with their poultry.

The light birds, such as the Leghorns, will do best just now when fed grain at the rate of 14 pounds per 100 birds per day, and the heavier breeds at the rate of 15 to 16 pounds per 100 birds. The hens will make up the rest of their ration from the dry mash. Feeding at this rate will help to keep the birds in the best of condition, which will prevent them from going into an unseasonal molt, providing, of course, there are no radical changes in management, and will also help to prevent disease; birds that are in good condition do not become affected with disease so readily as birds that are allowed to get in a run-down condition.

Clean, dry litter to a depth of about eight inches will provide a good scratching material. Oyster shell and grit are additional things that should be on hand. The oyster shell will help in the formation of shell for the egg and grit will help grind up the feed that is consumed. Plenty of fresh water must be on hand, as the egg is such a large per cent of water. In the winter, it may be necessary to look at the water supply, for it is likely to freeze. Warm water is more conducive for egg production than ice water. Many people keep a small burner under the water pan to keep the water from freezing. Special burners are sold for this purpose.

A Different Angle on Early Hatching

IT USED to be that real early hatching was considered something for only a select few to do: those who were especially favored by living in a section where winters were extremely mild, and brooding, therefore, was not so difficult, or those who had a special market that demanded eggs in the summer and early fall.

Conditions are different now. Poultry keepers have come to realize that more money can be made in the months of August and September than in any other months and that birds that are laying in these months as well as in the months of October and November will make some good money.

Discoveries in recent years have made indoor brooding possible and have removed the weather hazard. They have given new impetus to the production of early broilers in certain sections of the country; in fact, for some poultrymen, this has been the prime consideration rather than the production of pullets for eggs.

However, the hatching season in general for the hatching of the bulk of the flock has advanced. Farmers have found that it does not pay to have real late chicks. There is still room for improvement—poultry seasons are getting earlier each year, but there are still many that have not begun to realize the importance of getting their pullets out early.

I recently visited a farmer who lives a little way out of town on a much traveled road. He was selling all his eggs right at his door for 75 cents a dozen, and could nowhere near supply the demand. His birds were laying only 30 per cent. They were May hatched birds. Had they been hatched six weeks or two months earlier, he would have been getting more eggs and would have made more money. As it is, they will probably be laying in January, February or March, after the highest priced period of the year is over. October and November are the months when the prices for eggs are the highest. The seasons are getting earlier in the poultry end of the business, and poultry keepers must realize this if they want to make the maximum profits.

Ordering Baby Chicks

MORE and more farmers each year are buying their baby chicks from hatcheries and breeders rather than hatching them themselves. They have found, however, that it is not always easy to get their chicks about the time they want them merely by writing in to the hatchery a week or two in advance.

It pays to order chicks early rather than to wait until the last minute and then not be able to get them at all, or, at least, not until late in the season. It will, therefore, be worth while to plan immediately just when the chicks are wanted and order them at once.

In planning the time at which to have these chicks hatch, not only must the conditions at time of arrival be considered, such as other farm work that must be done and the buildings and equipment available at that time, but the time at which these chicks will mature and the pullets begin to lay must also be taken into consideration. From five to six months must be allowed for a Leghorn to mature, and a month longer for the heavier or dual purpose breeds.

While planning on the best time at which to get chicks, it must also be kept in mind that sufficient equipment must be ready for these chicks when they arrive. So if any new equipment is needed, order it now so it will be on hand and set up and in working order before the chicks are shipped.

Lights on Breeders

MANY poultry keepers find it to their advantage to turn on the lights in the pen containing the breeders in January. Some turn them on the first of the month; others turn them on the fifteenth of the month.

The purpose of this is to help the breeders to come into production a little more rapidly than they would naturally. There is no danger in this practice, for the hens have molted and have had a rest. Their bodies are, therefore, built up and are in good condition. This aid in getting eggs is especially desirable when hatching eggs are wanted in the early part of the season. Poultrymen have done this for several years and have noticed no harmful effects on the stock, either as chicks or after they have matured.

Lights may be turned on for an hour after the birds have gone to roost at night, say at nine o'clock, or they may be turned on in the early morning, or in the early evening just at dusk for an hour. An extra feeding of grain is given when the lights are used, at the rate of two pounds per 100 birds per day extra. These lights are used until the middle of March or the first of April.

Nests

NESTS are very important fixtures in a poultry house. One of the main reasons for keeping chickens is for the eggs that they lay, and it is in the nests that it is desired to have them lay their eggs. Therefore, attention should be given these important fixtures so the hens will prefer to lay in them rather than to steal their nests, or lay the eggs on the floors so that they become dirty and of decreased value.

First, see that there are enough nests, one nest for every five birds will be enough, unless trapnests are used—in that case there should be at least one nest for every three birds. Ordinary nests are of the right size when they are 12 inches wide and 14 inches deep; when trapnests are used, they should be 12 inches wide and 18 inches deep, being a little deeper than the other nests to allow for the trigger that holds the trap door open when the nest is set and closed after the birds enters. Have the nests at least 12 inches high so the bird will not be crowded when she enters; 14 inches is really better where the larger breeds are kept or for trapnests.

Hens prefer nests that are darkened. To this end, the nests can be arranged in a long row attached to and under the front edge of the dropping board, with the entrance to the nests from the rear. This is accomplished by a long board as wide as the nests are high that forms the front of the nests. This board can be hinged at the bottom so that it may be dropped when the eggs are gathered and hooked up the rest of the time. If the hens get the habit of roosting in the nests at night and dirtying them, a similar arrangement can be made for the rear so the nests can be closed at night.

Nesting material is important. Clean wood shavings make as good a nesting material as anything, and straw, sawdust and buckwheat hulls are also good. Keep nests clean and disinfected. Nests are a favorite camping ground for mites. Spray them at least once a month to prevent the appearance of these pests. Clean the nests at least once a month.

Parcel Post Marketing

WHY NOT TRY to develop a parcel post trade with market eggs? Many farms producing high quality eggs are doing this with good results. The trade is started either by getting someone to canvass homes in the nearest city or by sending circulars telling of the high quality fresh eggs to persons whose addresses are taken from the telephone directory.

One Michigan farm I know of ships eggs in six-dozen lots a distance of 160 miles to Chicago. This farm charges a premium of 30 cents a dozen above the wholesale quotation and pays all expenses, such as the cost of the pasteboard container and postage. The container is not returned. The postage on each box containing six dozen eggs is 19 cents for this distance. This farm ships 125 dozen eggs a week in this manner.

Turkeys Are Profitable

FARMERS in practically all parts of the country have found that modern methods of raising turkeys are profitable. It was formerly considered necessary to have a lot of land and turn the turkeys loose; the old turkey hen stole her nest and more often than not the poults died rather than lived.

The secret of raising turkeys is in raising them away from chickens on ground on which chickens have never run. They are kept confined to one yard or run, about 125 poults being placed under one regular sized brooder stove in a 10 by 12-foot house. Artificial methods of incubating and brooding have proved very satisfactory.

Strict sanitary measures must be followed, such as frequent cleaning of the house, clean water vessels and feed troughs, and an occasional spraying of the house. It used to be the idea that grasshoppers and other bugs could be relied on for a good share of the turkey diet. Modern turkey raisers, however, do not rely upon these foods, but feed a regular scratch and dry mash, just as is done with chickens. Wet grass will not bother as long as the vitality of the turkeys is kept up by proper feeding.